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ALMRS/ GIS

PUBLIC MEETING ON THE ALMRS REQUEST FOR INFORMATION

REPORTER'S TRANSCRIPT

PUBLIC MEETING ON THE ALMRS REQUEST FOR INFORMATION ON
WEDNESDAY, MAY 27, 1987, at
9:15 a.m. to 2:45 p.m., at the
SHERATON HOTEL AND CONFERENCE CENTER, located at
360 UNION BOULEVARD,
LAKEWOOD, COLORADO

The Public Meeting on the ALMRS Request For Information commenced on Wednesday, May 27, 1987, before a panel of eight, consisting of the following Bureau of Land Management spokesmen: Bob Leopold, Chief, Branch of ALMRS Development; Eric Strand, Chief, Branch of GIS Development: John Wong, Computer Systems Analyst; Bob Ader, Chief, Branch of GIS Implementation; Dave Nelson, Natural Resource Specialist; Dave Lyons, Contracting Officer; Dave Shaffer, Computer Specialist; and John R. Webber, Jr., Chief, Division of Information Resource Management. The Conference was presented by the United States Department of the Interior, Bureau of Land Management, ALMRS/GIS Project Office (D-150), Building 50, Denver Federal Center, Denver, Colorado 80225.

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MORNING SESSION, WEDNESDAY, MAY 27, 1987

(The RFI Conference convened at 9:15 a.m., with 98 firms and184 participants present, a panel consisting of eight members, and the following proceedings were had:)

INTRODUCTION

BY BOB LEOPOLD:

Good morning. Welcome to the Mile High City. For those of you who are interested, we have had a lot of rain around here, but for the past two days at the Bureau of Land Management we've gotten sun. So, we hope you appreciate that and that you take advantage of some of the beautiful climate we have here in Denver. If you have any questions of fun things to do, we hope we can help you along those regards as well. I'd also like to welcome you to this conference of the Automated Land and Minerals Record System which we affectionately call it ALMRS. We are glad you could come and we appreciate you taking time from your busy schedules to come and help us.

Let me just give you a little bit of our philosophy. What I'm talking about is the involvement of folks like yourself, vendors, whether they be software, hardware, or integrators, into the process of trying to help the ALMRS/GIS Project Office put an RFP on the street. We made a conscious decision over a year ago to involve you. Part of that process is you all sitting out here. We really believe that we need your help, and we say that sincerely. We do it for two reasons. We want to put on the street a complete RFP as possible. For one reason, to satisfy our users in the field. That's our number one goal. Number two goal is to make that RFP as competitive as possible. You bring those two things together, and I think the Department of the Interior and the users of the Automated Lands and Minerals Record System will be best served.

As most of you are aware, and bringing back the paperwork on this RFI

Conference, you asked for this conference. Again, we welcome you and we are glad that you are here.

There's a couple of housekeeping things that I need to go over so if you could bear with me for just a minute. I hope all of you signed up outside. That's for your benefit as well as ours. At the end of the day, if all goes well, we will have a list prepared for each one of you to take home to your respective states and cities and corporations. I think that will help everybody.

Secondly, I encourage you to pick up the handouts that are around this room. Most of them are gone. For example, I know some of you, even though we ran an extra hundred copies of the RFI that we sent out in April, some of you didn't get the opportunity to pick that up. So we ran out already. So, Bill Moody, who's in the back of the room, is going to prepare a list. If you want an additional copy of that RFI, the original one that we sent out almost two months ago, put your name and corporation down and we'll make sure you get a copy within the next week.

We encourage you to take a look at the displays. What we have tried to do is to give you a feel of what the Bureau of Land Management is presently doing. Underline the word presently doing. Also, you will see some of the historical significance of what the BLM does. For exampe, the display we have over here is the old land office. A lot of the old westerns that you see came around the land office. Get a feel for the history of what we are trying to do in this project. I think that's important for you to understand that.

Secondly, you will see a lot of the more modern displays and more modern tools that we are using and trying to go towards. All of you received this document. If you didn't, there's more outside. Could I ask you to open that up, please.

On the right side you will find the agenda, which I will go over in more

MISSION OF THE BUREAU

MANAGE PUBLIC LANDS AND RESOURCES UNDER MULTIPLE USE AND A SUSTAINED YIELD PHILOSOPHY

—RECOGNIZE NATIONAL NEEDS FOR NATURAL RESOURCES WHILE PROTECTING IMPORTANT PUBLIC VALUES SUCH AS CULTURAL HISTORICAL VALUES AND NATURAL SYSTEMS

OVERHEAD #1

detail shortly. You will also find what we call the ALMRS Concept Document. It's this grey--you will aslo find in that an index card if you want more of them. This was done over 18 months ago. We are proud of the fact that it still remains our centerpiece or our focus of where this Project is trying to go. It's written in lay terms so that most people can understand what we are trying to do. You might want to peruse that before the end of the day.

On the right-hand side--excuse me, on the left-hand side, you will find this document that basically explains, in laymens terms, the Federal Land Management Policy after 1976. Why is this important? This changed the way the BLM operated. It's a document now that's over 11 years old, but it is what we call our organic act. At that time we went principally from a disposal agency to a land management agency. It's a significant milestone in the eyes of the BLM.

You will also find in this, kind of our organization of our Project Office. I hope you find that helpful. You will also find other organizational alignments of the Bureau of Land Management and the Department of the Interior. You will find a couple of maps in here that we'll be explaining more in detail of our organizational structure, which is principally based upon an office in the Washington Office, each State Office, which is principally in the the capital of each state, principally the Western United States, District Offices, and Area Offices. Some 170 in total. You will also find a couple of index cards in here which we will explain more. These are for you to ask questions, and I'll go in more detail at the closing on how I would like to have you participate in that.

Okay. Let's go back to the agenda. Everybody got it? This morning we are principally going to be talking to you. This afternoon you're going to be talking to us. That's kind of the way we have the day arranged.

This morning we are going to be going over these topics. I'm just going to highlight them for you. Our procurement strategy; where we are today and where we are trying to go? What is the present status of the Project? What does BLM do? In other words, what is our mission? We are going to spend a lot of time on that this morning. Inferences were made that that's really one of the topics you want to find out. Who are we? What do we do? Why do we do what we do? Where we are trying to go?

We will get more into the technical aspects of the project and system talking about data base management, some of the efforts that we are doing right now, I'm talking about the modeling effort that's going on trying to develop the new system. And then lastly, we are going to talk about standards. Why we think they're important? What we think is important?

We are going to break about 11:30, there abouts. You will find that there are a lot of restaurants up and down Simms and Union, all of which are good. If we don't break around 11:30 quarter to 12, you don't get in those places. So, I would encourage you if you are going to eat, move quickly.

At 12:30 we are going to be showing a video tape. Secretary Hodel, of the Department of the Interior came out here a couple of weeks ago, and we briefed him on the status of the project. If you desire to see that, we are going to show that at 12:30. We also have copies of that available back there at a small fee, if you desire to have that after you've seen it. We think it helps illustrate some different things in what we are going to tell you today.

Then at 1 o'clock we are going to come back, and then it's your turn, questions and answers. These two index cards that we have, keep them in mind as we go through here. If you've got specific questions, general questions, please write them down. I'll get into a little more detail here just shortly.

Let me introduce the panel. Dave Lyons will be talking about procurement. Dave. He's the handsome guy on the left-hand side over here. Eric Strand, will be talking about the status of the project. Dave Nelson. He's kind of our--one of our older members of the organization, so he knows the most about the Bureau, and he's going to tell us about the Bureau. Dave Shaffer, he's from our Washington Office. He's going to be talking about data base management. John Wong will be talking about standards. What they are and what they mean to us? Jack Webber is the head of our Information Management Organization back in our Washington Office. He will be talking about our Modernization Project and our hardware contract that is coming up. Bob Ader is our--he will be answering questions on principally resource functions. Bob presently is our GIS Implementation Chief here in Denver.

We are going to shift gears. I'm going to talk about what's the purpose of this conference? What do we want and what do you want? You want to skip that one for me, Matt. Go to the second one. We are trying to share information on what we have learned from the RFI response to date. In other words, information from you, what have you told us?

The second table over there has got a summary of what you have told us. We have purposely protected the proprietary natures of approximately 20 feedbacks that we have got from you. You will find that document protects those rights. We are very sensitive to that as you well are. So that is the summary of about 50 questions that we asked. It will give you a perspective and a concensus. That doesn't make it right or wrong. That just gives you where we are.

The second one is to allow you to ask questions. That's extremely important to us today. We need your help. We need your help through constructive ideas, concepts, specifics, we need it. We are here to brief you on the Bureau and particularly this project, and how it relates to what the Bureau does. As I mentioned

PURPOSE OF CONFERENCE

1. TO SHARE INFORMATION ON WHAT WE HAVE LEARNED FROM THE RFI RESPONSES

2. TO ALLOW YOU TO ASK QUESTIONS

3. TO BRIEF YOU ON THE BUREAU AND THE ALMRS PROJECT

4. TO IDENTIFY SIGNIFICANT ISSUES TO THE PROJECT OFFICE THAT COULD AFFECT THE RFP

    A. TECHNICAL PERFORMANCE
    B. SCHEDULE(S)
    C. COST(S)

5. TO FACILITATE VENDOR TEAMING

OVERHEAD #2

before, we are going to spend a great deal of time on that.

Fourthly, to identify--and we are asking this of you--to identify significant issues to the Project Office that could affect; (1) technical performance of our system, (2) schedules, and (3) costs. They're in no particular order. We feel that the three of those are equally important. To be successful you have to have all three of those, and we will be successful.

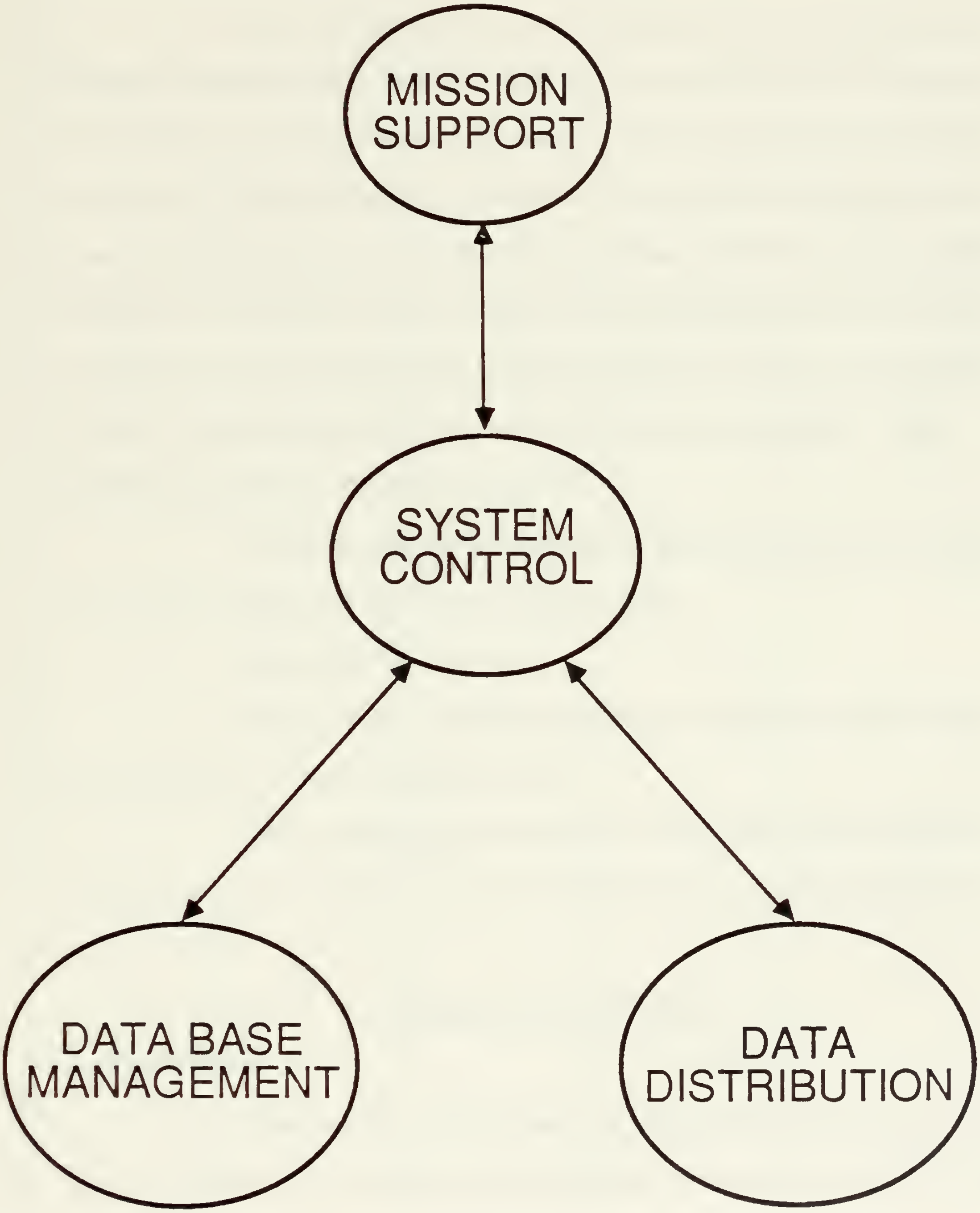
Number five, there was a keen interest out there for some organizations to team. This is why we spent quite a bit of time putting together various lists, phone numbers, addresses. We encourage you, if you desire to do that, to talk to one another today . Buy your neighbor a beer, so to speak. We think it will help and it will help us in communicating back with us as well. So we encourage you to do that. Talk amongst yourselves.

These are kind of the rules of the game that we would like to set up. This is how we will be presenting the system context to you. We ask that you feedback to us in these four major categories: Mission Support is fairly obvious. What do we do? Who are we? What do we want? What do we need? Those kinds of things. This is how the RFP, in its broadest contex, is going to be structured.

Systems Control. We will be talking about things like operating systems in that context. Data Base Management/Synchronization. Another broad category. We will be telling you what we are doing in terms of data base design and development. How we are thinking about that--underline the word thinking about.

Finally, Data Distribution or our communications. What kind of standards we're talking about? How we think it may work, and how we are preparing those specifications. We are a decentralized organization. That's extremely important to the BLM. Our decisions are made on-the-ground. Extremely important to meet those users'

BLM SYSTEM CONTEXT



MISSION SUPPORT

SYSTEM CONTROL

DATA BASE MANAGEMENT

DATA DISTRIBUTION

OVERHEAD #3

needs. Our publics relate to on-the-ground. We are a lot different than many federal agencies, a lot different. Our closest one is probably the U.S. Forest Service in how we operate in the field. They're also decentralized, and they're proud of that as well. But our decisions are made on-the-ground. That's important for all of you to know that.

Okay. With this construct in mind, these 3X5 cards , if you have general questions we will collect them at roughly 11:30, I think we have got a box in the back and one outside. If you want to bring them up here to myself or anybody up here, that will be fine too. If your questions are still unanswered at 11:30, as Johnny Carson says, bring those cards and letters forward. We will try to answer them. But this is how we are going organize them. Starting at roughly 1 o'clock, we will probably start out where most of the questions are. We encourage you to put these questions in. That"s our mechanism for feedback. Not informal chit chat, but coming forward with those questions so that everybody can benefit from them, mostly us.

We are transcribing this. If you desire, again for your use, there is a small fee to do that. William, how much is that? Do you know?

WILLIAM MOODY: $20.

BOB LEOPOLD: $20 if you desire this. It maybe helpful to you. If it is, you're welcome to it. Sign up and obtain that.

Again, let me thank you for coming. We appreciate your time, and I'm going to turn it over to Dave Lyons and he will begin in telling you about procurement issues.

PROCUREMENT STRATEGY

BY DAVE LYONS:

Good morning. If you will notice, as usual, procurement is sort of over the edge. I guess we--that's our destiny. I want to put this conference into perspective of the

ALMRS Program. First of all, my name is Dave Lyons. I'm a contracting officer that's assigned to various ALMRS procurement initiatives, and I work at the Denver Service Center in the Branch of Procurement.

At the present time, we have four procurement initiatives that have to do with ALMRS, and the subject of this mornings conference is really primarily with regard to one, and there's another that's relative to it, and I want to make that distinction. First of all, that the software development is the--is what we are issuing the RFI against and asking for comments. Modernization is the hardware and other software project for the entire Bureau, which will be addressed by Jack Webber. The other portion of ALMRS that is going on right now is data collection, which is an ongoing project in which we are collecting the lands status information on a state-by-state basis, and putting it into computer compatible form. Another project is what we call support services, which is a solicitation. The latter two are solicitations that will be going out this month, and they will be available. They are unrestricted as far as competition is concerned. They're not set aside for small business or any other social economic 8A type procurement.

But this morning what we are focusing on is the software development project and how it relates to the hardware procurement. From a procurement perspective, we are looking at three objectives, which are mandated by the Congress and by the firmer regulations, and they are that we seek and obtain competition, economy, and efficiency as part of our acquisitions. As part of that, we intend to develop a program that will be competitive. The relationship between the ALMRS and Modernization is that we perceive ALMRS as a major application of the Modernization Project, and that distinction should come clear as the morning's discussions continue.

Both procurements will be developed against a common environment of functional requirements, and that includes the standards, which we will discuss this

FOUR ALMRS PROCUREMENT INITIATIVES

SOFTWARE

MODERNIZATION - HARDWARE, OTHER SOFTWARE

DATA COLLECTION

SUPPORT SERVICES

OVERHEAD #4

morning. The software is going to be procured first, although the two procurements will be concurrent, the software will go on the street prior to the hardware requirements. The objectives of the software requirement will be that we will develop software so as to maintain the machine--multiple machine portability to the greatest extent feasible, and that also we will mitigate the cost of the software conversion once the hardware system is selected.

We are procuring these two requirements separately, and one of the rationales from the procurement perspective is that there is a fundamental difference in the manner in which the acquisitions will be evaluated. To our perspective the software development will require an evaluation of the technical excellence in the qualifications of the offerers. In fact, because of the technologies that have to be merged and proposed, we perceive that there will be some teaming conducted amongst various organizations in order to propose the ultimate software program that we require.

Modernization, which will include the hardware and the communications system, will be evaluated based on the traditional ADP standard form of contract in which we will evaluate the systems life costs for proposals that will be submitted against mandatory requirements and optional evaluated features. The actual timeframe for the software development is, under the existing plan, scheduled for early 1988 with award--that's for the solicitation--with award estimated to be some time in the third quarter of 1988. Jack Webber will discuss the timeframe for Modernization.

Another perspective is that this process--we have gone to the vendor community at an earlier stage than I guess the most government projects come to you. We have come to you with a request for information rather than wait until we have a request for comments or request for proposal. The reason is because of what we have talked about, about the technologies that are required and that we want to give some time to get your input at an early stage in our development, and to allow vendors to prepare for meeting some of the standards that we are proposing.

Another thing that I think you should know is that this is not just a Bureau program, this is a Department approved program. OMB has been--advised them that they have established certain ceilings for us, and it is under their continual review. It has also been announced as one of the Presidential initiatives that OMB has listed.

I think that at this time we should have obtained some information on the Modernization Project, and I would like to introduce Jack Webber who is the IRM for the Bureau in Washington.

HARDWARE AND NON-ALMRS SOFTWARE

BY JACK WEBBER:

Good morning. I'd like to give you some information about the BLM and our Modernization Project where we are now and what we have now and what we are dealing with.

Currently the Bureau of Land Management has Honeywell mainframes located here at the Denver Service Center. They were installed around 1978. In addition to the mainframes, we also have Honeywell Level-6 minicomputers installed around the Bureau, in each of our State Offices, and our Boise Interagency Fire Center. We also installed around that time, Data General equipment to process Geograhic Information System type of applications. As you can see our systems are of the '78 to '80 vintage, and the original configuration was based on a 1976 strategic plan.

Over time, the systems are becoming obsolete. The systems are becoming saturated, and that one of our deliverables from the Modernization Project showed us that we have over 140 vendors represented in our inventory. We have, over time, have had many upgrades, modifications and enhancements to our hardware base, but since we are reaching saturation and obsolence, and it's quite clear to us that the ALMRS System cannot be housed on our current configuration, we need to do something about that. So, in order for us to ensure that we have the right kind of equipment and data communications equipment to support the Bureau into the 1990s, we initiated what we called the Modernization Project. Our Modernization Project will provide a framework for all of BLM's information systems. This includes the administrative type of processing like procurement, personnel, budget, case operations processing, such as ALMRS. We've included office automation and we've also included our GIS requirements.

In 1985, BLM awarded a contract to American Management Systems to conduct the Modernization Study, and the purpose of this study was to assist BLM in identifing its needs and for integrating its needs into requirements for ADP, hardware, system software, and data communications equipment to support us into the1990s. We are currently in the process of winding down that project. We are almost complete. AMS will conclude the study around September of this year.

We have other initiatives going on to support that study. We also have initiated a study to further identify and document our requirements for GIS processing capabilities. In 1986, the Department, through Fish and Wildlife, awarded a contract to Prime Computers to satisfy our interim GIS requirements. Our Data Generals basically are DG 330 and M600 if you know the type of equipment I'm talking about. The Primes are now being installed throughout the Bureau to replace those old Data Generals, and that contract will expire in five years. And about 1990-91, we will be looking at another procurement vehicle to support those needs.

We also have currently a contract with Wang. That contract was assigned in 1983. It too expires in 1988. So, we had to look at where do we go after 1988? What's going to be with word processing and office automation requirments? What's life after 1988? So, we combined all of these requirements into our Modernization effort. One thing that the field people made very clear to us, is because we have 140 vendors in our inventory, we have to go to one box to do this and one box to do that, and they say, we don't want an ALMRS box. We don't want a GIS box. We don't want an administrivia box. We don't want a GIS box.

Technology ought to allow us to acquire the hardware that can probably satisfy all those needs, and those are the needs that we are going to identify through our Modernization Project. Also, included in the Modernization Project is the need to identify what type of conversion we are going to have to go through with our current software suite. We have about 60 plus major Bureau of Land Management systems on our hardware distributed Bureauwide. Some of those systems were converted line by line when we bought the Honeywells in '72. There wasn't too much improvement done to them.

Well this time, we want to do it a little bit differently. We would like to do a Smart conversion to our new technical architecture. Some of the systems will probably be converted line by line. Others will have to be redesigned. Some of the system will probably go through major reconversion. Some of the systems will be subsumed by ALMRS, and some of our systems might be subsumed by some departmental initiatives now going on like the push for a Department-wide financial management system.

So we have some major changes and major thoughts there on software conversion. Again, the Modernization Study isn't going to identify and assist us in assessing the software suite and what needs to be converted and what will be dropped and what will be redesigned.

Our Modernization Project is on schedule. As I said, the study itself should be completed by September of this year. We anticipate completing our draft RFP specifications in January of '88. We are going to issue an RFC in March or April of '88. We will probably announce the RFP in August of '88, and the would like to receive the vendor proposals by March of 1989. From March of 1989 to December of 1989 we will be in the evaluation period, which will be the technical scoring, the cost evaluation, the mandatory requirements, and establishing the competitive range. We will have live test demonstrations, best and finals, and if all goes well, in the procurement business of the Federal Govemment, we will award the contract for the hardware, system software, and data communications in January of 1990. That's our plans. That's our hopes. And that's about all I have to say about the Modemization Project.

So, I would like to introduce next Eric Strand. He is the Chief, Branch of GIS Development here at the Denver Service Center, and he will be discussing the LIfe Cycle Management Process for ALMRS.

ALMRS PROJECT STATUS

BY ERIC STRAND:

Thank you, Jack. I'd also like to welcome you to the City Lights Room. We are ahead of schedule, and if all goes well you probably won't notice why they call this the City Lights Room. Of course, with the shutters closed you won't notice anyway.

I would like to talk to you this moming about the ALMRS Project Status and give you a very brief overview of what we are doing and where we are now, in that process, and hopefully why we are doing it.

What is it that the BLM does? Well, as you might image the Bureau of Land Management manages lands. We plan and set policy for the use of these lands, and that's a multiple use, takes into account development and resource management

BLM'S RECORDS MISSION

- MANAGE LAND AND MINERAL RESOURCES ON
  350 MILLION SURFACE ACRES AND
  750 MILLION SUBSURFACE ACRES
- FEDERAL LAND RECORDS REPOSITORY
- CONDITION AND ACCESSIBILITY OF RECORDS AFFECTS TIMELINESS AND QUALITY OF DECISIONS:
  - MINING CLAIMS
  - MINERAL LEASING
  - RIGHTS-OF-WAY
  - GRAZING LEASES
  - TIMBER SALES

OVERHEAD #5

guidelines. We process requests for using these lands, and we also maintain public land records and that information is the information that's vital to the ALMRS Program, these public land records.

So, a system for ALMRS really has to look across to several different information data bases, and these would include then land records, natural resources, and survey or coordinate information from our cadastral survey group. I'd like you to please take the opportunity later on today to walk around and take a look at some of the exhibits around the room. They should give you a better idea of the type of information we are using and what we do with that information. Also, after my talk, Dave Nelson will provide a little more detailed description of what the Bureau's mission is.

One of the questions that we often get asked by oversight groups such as the Interior's Resource Management Review Counsel, the General Services Administration, and Office of Management and Budget is really why are we doing this? Well, let's start off with what would happen if we don't do this? If we don't acquire a system for the Bureau for ALMRS? And this is pretty much the types of responses we have been providing the oversight groups, including the Secretary of Interior, Hodel.

One thing is that the Bureau will begin and continue spending enormous amounts of money just trying to maintain the operational system that we have, which is very manually intensive. Also, we will need to look at acquiring additional staff, and in the Federal Government that's difficult, if not impossible to do, and the result is usually an increase in backlog. And when energy prices go up, that is not a desirable situation at all.

Also, there are other federal agencies acquiring the same information, and this is a duplication of effort and its a redundant data, and there's duplication in costs involved. More importantly, we are going to be faced with a lot of problems in the future, and we are going to be left with outdated tools in order to deal with important information

ALMRS OBJECTIVES

- FASTER CASE PROCESSING
- GREATER EFFICIENCY/ACCESS TO DATA
- IMPROVED PROGRAM MANAGEMENT, THROUGH EXPANDED REPORTING AND STATISTICS
- COORDINATED DATA COLLECTION AND SHARING WITH RELATED SYSTEMS

OVERHEAD #6

WHAT WILL HAPPEN IF ALMRS IS NOT ACQUIRED?

- BLM WILL BE FORCED TO SPEND $102 MILLION TO RENOVATE, OPERATE, AND MAINTAIN THE EXISTING INEFFICIENT SYSTEM.
- IF WORKLOAD CONTINUES TO INCREASE, EITHER ADDITIONAL PERSONNEL WILL HAVE TO BE HIRED OR SIGNIFICANT BACKLOG WILL OCCUR.
- OTHER AGENCIES WILL DUPLICATE ALMRS DATA COLLECTION (FOR OVERLAPPING SUBSETS) AT A SIGNIFICANTLY HIGHER COST.
- THE FEDERAL GOVERNMENT WILL MOVE INTO THE 21ST CENTURY, USING 19TH CENTURY TOOLS FOR MANAGEMENT OF ITS BASE INFORMATION ON LAND OWNERSHIP AND AVAILABILITY.

OVERHEAD #7

on land ownership and availability, or we will acquire ALMRS for the Bureau.

This system is going to result from this ongoing program that we have--continues to receive approval through the hoops. As Dave Lyons mentioned, it is one of the 17 Presidential priority systems. So we have a lot of visibility and top level support to ensure its implementation. The Office of Management and Budget has seen fit to increase our ceilings through the next several years, Fiscal Year 1988 through Physical Year 1992. And we anticipate that General Services Administration will provide us with a delegation of procurement authority in the first quarter of Fiscal Year 1988.

The benefits that we anticipate as a result of implementing the ALMRS System will be, (1) to preclude the need for adding people to handle this increased workload. Also, we would like to avoid this redundant data collection activity among agencies, and to avoid the additional data collection costs incurred. We also will have the opportunity to provide new products, information products, and services. This is usually a result of a successful automated data processing system. Products and services that we now presently cannot offer our public. We also want to make sure that we can avoid the cost of continuing to maintain our manual records system and continue to revise those manual records.

The ALMRS Project really has several activities . I have shown three that are currently underway. First of those is we do maintain the existing operations in the Bureau for handling the land and mineral records, and in fact, we do have some automated systems to do that at least for the tracking of cases. We also have ongoing procurements for collecting data, and we look at these procurements as resulting in data bases that will be used by the ALMRS System once the ALMRS System is developed and implemented. Dave Lyons mentioned the procurement on the status data collection. That's one such example of data collection contracts, but both of those activities are separate from what we are talking about today, and that's the middle item there. That's a design and development of the ALMRS System.

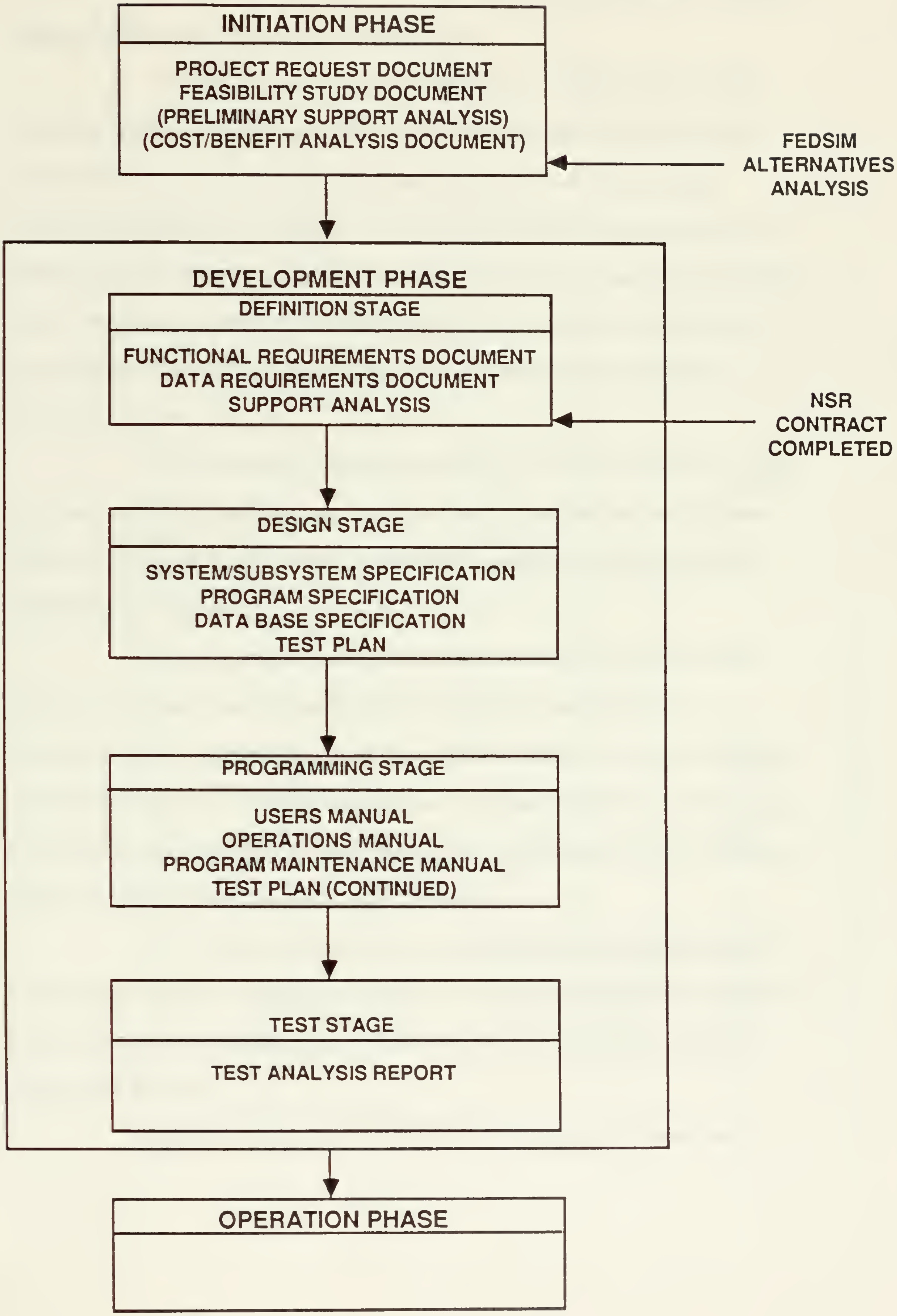
For this development we are following the prescribed Life Cycle Management guidelines according to the Department of Interior, and the three major phases that they look at are going through the initiation phase that's just to get this project off the ground, the development phase and the operation phase. We mentioned that Bureau Modernization will be in the out years that will support the operation phase. Today we are really looking at the heart of this, which is the development activities required in the development phase. Should say BLM has completed the initiation phase and is just started in the development phase, and I will give you a few details here.

The initiation phase covered both our mission analysis, establishing the requirements of the Bureau, and a conceptual model that can be used for alternative comparisons to see if this system is one feasible and cost effective. To do that in the initiation phase, BLM made arrangements with a group called FEDSIM to assist us in developing a Feasibility Study, and in doing the necessary benefit/cost analysis to get this effort underway. FEDSIM is a GSA organization. They do serve as consultant to federal agencies.

The Feasibility Study included an overview of functional requirements for ALMRS and a comparitive analysis of feasible alternatives for establishing the benefit/cost ratio, and that report, the Feasibility Study, is available if you would send a written request in to the ALMRS Project Office.

Some of the alternatives that were analyzed range from total centralization to total distributed data processing system. These alternatives were put together just to come up with a cost benefit analysis, and I want to emphasize that they are in no way, shape, or form meant to constrain the design and development efforts for the

PROJECT OBJECTIVE



INITIATION PHASE

PROJECT REQUEST DOCUMENT
FEASIBILITY STUDY DOCUMENT
(PRELIMINARY SUPPORT ANALYSIS)
(COST/BENEFIT ANALYSIS DOCUMENT)

FEDSIM
ALTERNATIVES
ANALYSIS

DEVELOPMENT PHASE

DEFINITION STAGE

FUNCTIONAL REQUIREMENTS DOCUMENT
DATA REQUIREMENTS DOCUMENT
SUPPORT ANALYSIS

NSR
CONTRACT
COMPLETED

DESIGN STAGE

SYSTEM/SUBSYSTEM SPECIFICATION
PROGRAM SPECIFICATION
DATA BASE SPECIFICATION
TEST PLAN

PROGRAMMING STAGE

USERS MANUAL
OPERATIONS MANUAL
PROGRAM MAINTENANCE MANUAL
TEST PLAN (CONTINUED)

TEST STAGE

TEST ANALYSIS REPORT

OPERATION PHASE

OVERHEAD #8

ALMRS System, and that's both for the software development procurement as well as the hardware procurement under Bureau Modernization.

Some of the conclusions that FEDSIM has, (1) that the most feasible alternative would be a distributed architecture for processing ALMRS information and mostly this is because a centralized system would be felt to have extremely high telecommunication costs. FEDSIM also concluded that existing procurement that Jack mentioned earlier, Prime computers installed in the states for GIS, would not be adequate to also serve the requirements of the future ALMRS System, and also that certain data base designs and methods for handling graphics information would be more cost effective than others.

Terms of the cost benefit. If we looked at just the BLM users the project is feasible and cost beneficial for us to implement, but you can see here how important ALMRS is, not only to BLM, but also to other federal agencies and other users in the public and private sector.

Let's look at the development phase. Let's see the top box initiation phase, we completed that with the FEDSIM Study and the Feasibility Study. The development phase we have been going through this definition stage, and we anticipate completion somewhere in September of this year. This step really looks at documenting the requirements of the system and we used the National Systems Research Company to help us with completion of the system definition phase.

We will have, in September, the requirements specification statement of work, and we will begin pushing those documents through the procurement process, and believe it or not, as Dave pointed out, it will take us until next year this time before we actually have an award.

Some of the products of this step, (1) is a description of the current

BENEFITS OF AUTOMATION TO DATE ARE SUBSTANTIAL

- ANSWER CASE INQUIRIES 3X FASTER
- RECORDS ACCESSIBLE AT ANY TERMINAL
- REDUCED PAPERWORK BETWEEN OFFICES
- REPORTING AND WORKLOAD ANALYSIS IMPROVED
- FASTER LOCATION AND UPDATE OF CASE INFORMATION

- USERS BECOMING KNOWLEDGEABLE AND SUPPORTIVE IN TOLERABLE INCREMENTS

- 267,000 CASES IN SYSTEM
- 250,000 TRANSACTIONS/MONTH

OVERHEAD #9

ALMRS IS ONGOING AND APPROVED

- ONE OF 17 PRESIDENTIAL PRIORITY SYSTEMS
- OMB HAS INCREASED OUTYEAR CEILINGS (FY 88 - FY 92)
- EXPECT DELEGATION OF PROCUREMENT AUTHORITY FROM GSA BY FIRST QUARTER OF FY 88

OVERHEAD #10

manual and automated systems that BLM now maintains for handling land and mineral records data. We also have a detailed functional requirements document and detailed data requirements document. Dave Nelson will be providing examples of this documentation that we are currently developing in his talk, and Dave Shaffer will provide a talk on the model, at least the conceptual model, for how we are looking at linking all this data together.

We anticipate that software development procurement will continue with the following steps therefore designing and constructing and providing the test and user acceptance of this system to complete this development phase. We are looking for you to propose a software development methodology that would be in line with our Life Cycle Management approach.

The operation phase, that's the small box on the bottom, probably the most important box, really covers the implementation and maintenance activities once the system has been developed. Since the ALMRS software is going to be implemented as an application on the technical architecture that's acquired and installed throughout BLM, from the BLM Modernization Procurement, we are looking to have the design and development of the ALMRS software look at any implications that might arise in developing software and then installing it on hardware procured separately through modernization.

So, we again welcome your comments on any technical aspects of developing software components that will be installed on an alternative technical architecture that will result from BLM Modernization.

I know we are running early, but on the agenda we will be providing our court reporter a break. So, I'd like to move that we take a 10 to 15 minute break at this point and then–make that 15 minutes. Be back by 10:15–sounds nice--and then Dave Nelson will present the more detailed look at the Bureau's mission.

Coffee is outside and you'll need cash.

(Break was taken from 10:00 to 10:30 a.m.)

MISSION SUPPORT

BY DAVE NELSON:

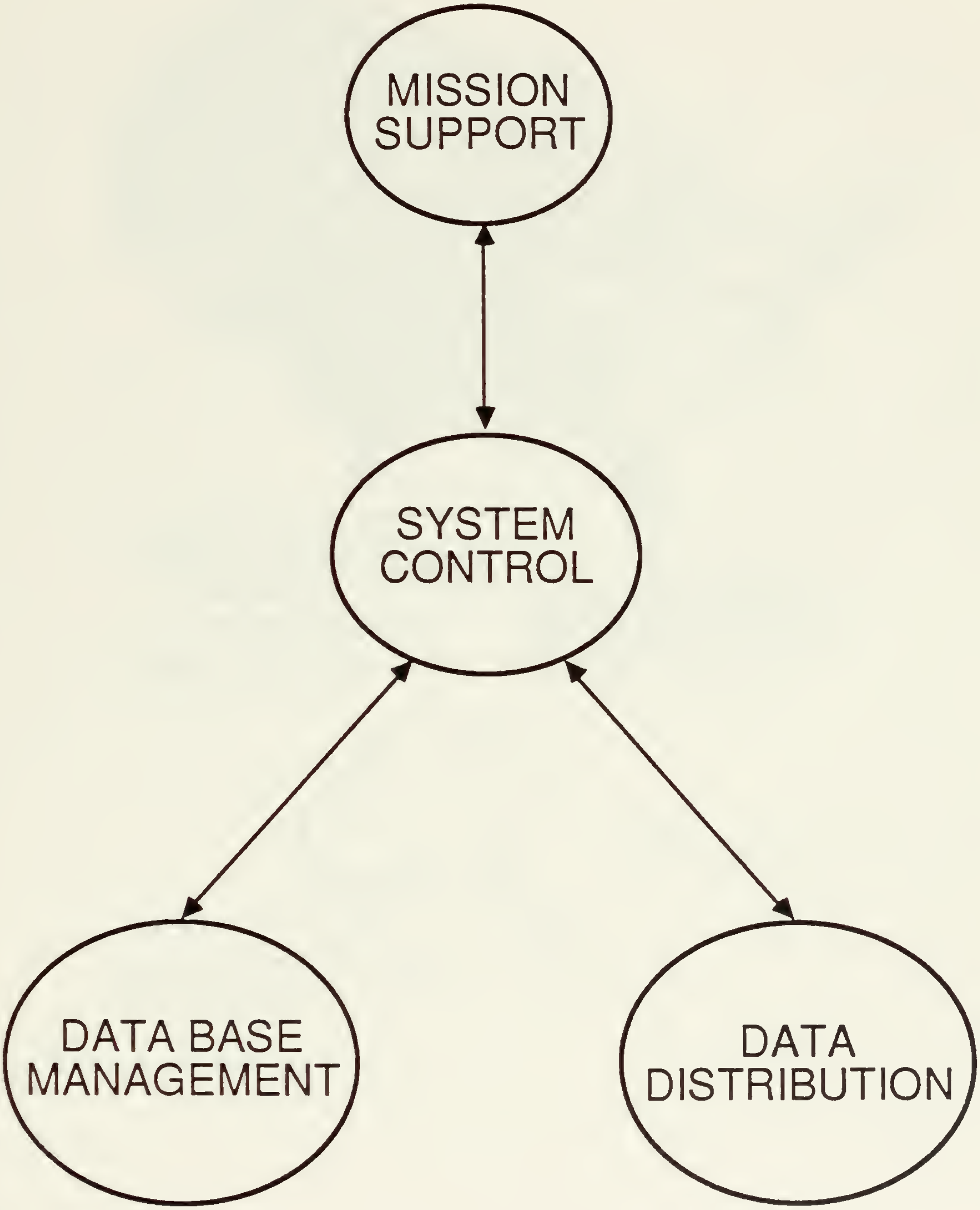
My name is Dave Nelson, and I'm going to follow along with something about the Bureau's Mission and so I'm talking about the top box over here in our diagram and want to--want to tell you I appreciate your being here before I get started, and I spent considerable amount of time with material that respondents did send in, and we sure appreciate that and I want to thank you for that.

The purpose of this discussion is to supplement data in the Request For Information that was the material in the yellow book that was sent out on the Bureau's mission and work, its organization, and its locations. A need for information in these areas has, indeed, been indicated from your responses to the RFI.

The mission of the Bureau's predecessor agencies was to dispose of the federal lands, to raise revenue, and facilitate settlement on a frontier. The original states total 300 million acres and was expanded to 2.3 billion acres. Of this 126–I'm sorry, 1.26 billion acres has been transferred to private ownership. Keeping the legal records of these land title transactions from the United States and sometimes returning to the United States is a continuing BLM work element. There have been several references to the land and mineral records and to status records. These are, indeed, a major and long standing function of the Bureau.

The Bureau is a successor to the General Land Office and maintains the land and mineral records for the United States and provides public access to these

BLM SYSTEM CONTEXT



MISSION SUPPORT

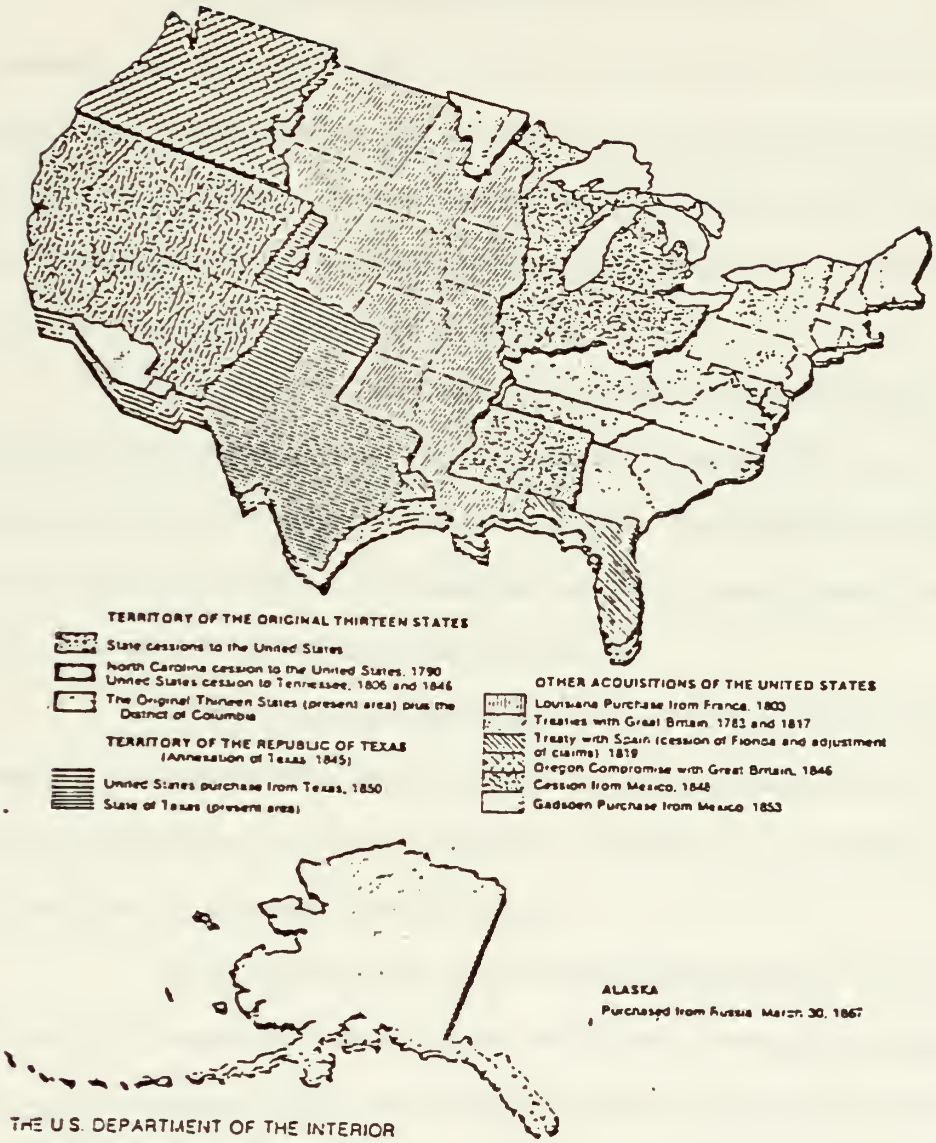
SYSTEM CONTROL

DATA BASE MANAGEMENT

DATA DISTRIBUTION

OVERHEAD #11

ACQUISITIONS


TERRITORY OF THE ORIGINAL THIRTEEN STATES
State cessions to the United States
North Carolina cession to the United States, 1790
United States cession to Tennessee, 1806 and 1846
The Original Thirteen States (present area) plus the District of Columbia
TERRITORY OF THE REPUBLIC OF TEXAS (Annexation of Texas, 1845)
United States purchase from Texas, 1850
State of Texas (present area)
OTHER ACQUISITIONS OF THE UNITED STATES
Louisiana Purchase from France, 1803
Treaties with Great Britain, 1783 and 1817
Treaty with Spain (cession of Florida and adjustment of claims) 1819
Oregon Compromise with Great Britain, 1846
Cession from Mexico, 1848
Gadsden Purchase from Mexico, 1853
ALASKA
Purchased from Russia, March 30, 1867

THE U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OVERHEAD #12

records, and that, in the automated system, will become automated public access to the records dating back some 200 years ago this spring when the first patent transferring federal title to private estate was issued.

The Federal Government now owns 737 million surface acres and subsurface acres under private surface of another 56 million acres. Other federal agencies have been mandated to manage 395 million acres for specified purposes, and 342 million remaining surface acres are administered by the Bureau, and the Bureau also administers subsurface federal rights, oil and gas, coal leasing, and so on, on 793 million acres. A little better than a third of the United States.

The mission foil here indicates that the Bureau of Land Management is to manage the remaining public lands under principles of multiple use and sustain yield, and recognize national needs for natural resources while protecting important public values, such as cultural resources, historical resources, and natural resource systems including wildlife, watershed, recreation, scenic values, and so on.

Management of land and mineral and renewable resources involves developing activity plans for individual resources and coordinated land use plans. The amount of analysis and the number of alternatives considered varies with resource values and the degree of controversy existing in the area.

Activity planning in turn involves conducting inventories of U.S. rights in land and mineral resources, cultural resouces, and natural systems; examples include transportation networks, the Bureau construction maintains a major road system on its land, forest inventories, range, vegetation, water, wildlife habitat, climate, soil quality and quantity for a great number of resources.

It is also pertinent that resource information is indeed land-bound and

MISSION WORK

MANAGE PUBLIC LANDS AND RESOURCES UNDER MULTIPLE USE AND A SUSTAINED YIELD PHILOSOPHY

—RECOGNIZE NATIONAL NEEDS FOR NATURAL RESOURCES WHILE PROTECTING IMPORTANT PUBLIC VALUES SUCH AS CULTURAL HISTORICAL VALUES AND NATURAL SYSTEMS

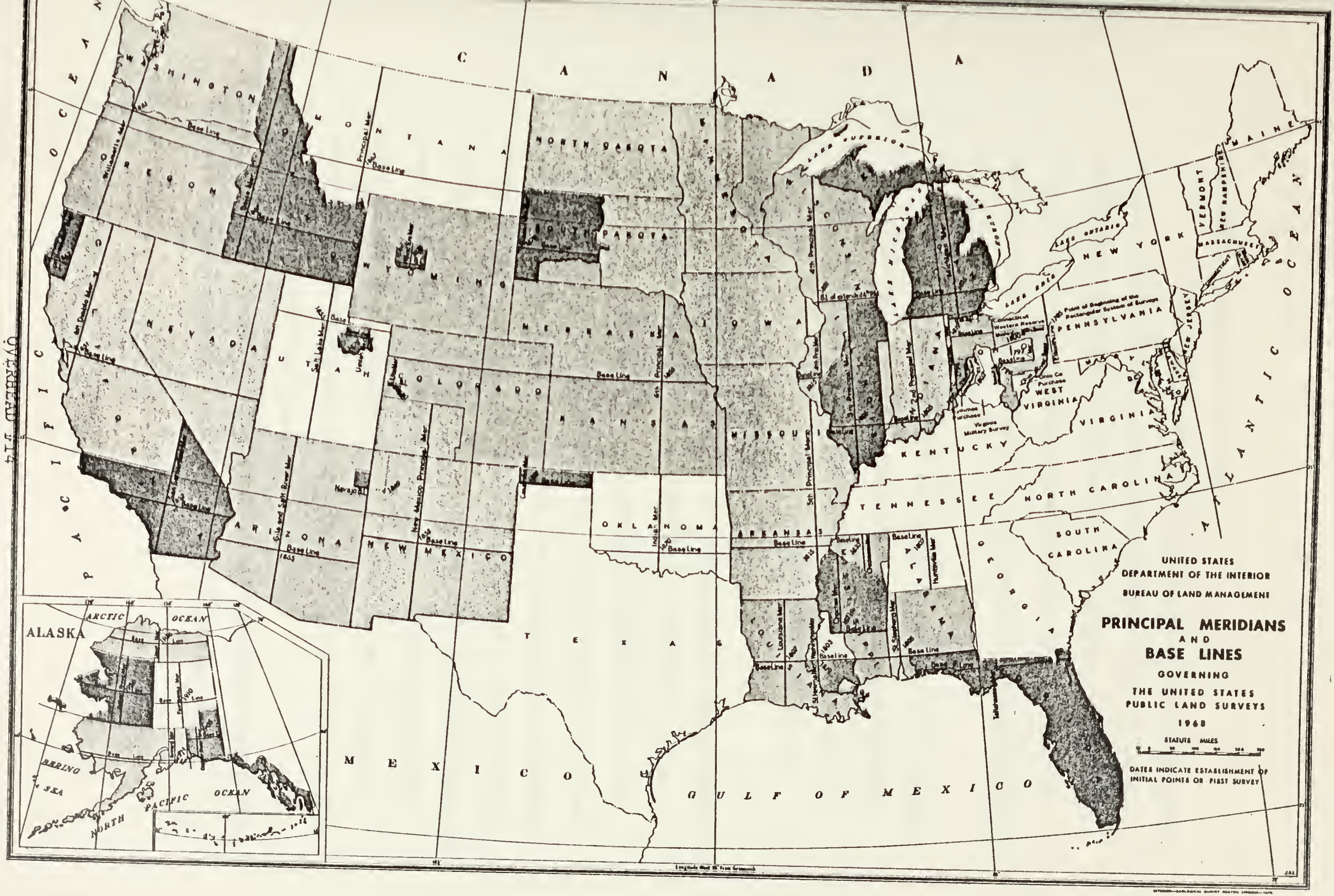
OVERHEAD #13

site-specific and, as Eric indicated earlier, much of our work is map-oriented and spatial data analysis therefore is a major concern.

Another category of our mission involves the monitoring of direct management actions, such as land and mineral use authorization cases for compliance and performance to the terms of the case. Monitoring renewable resource conditions and inventories includes the authorization cases for timber sales, grazing, and so on, and also the natural changes and trends and events such as growth, disease, fire, and flood. Land management planning, inventorying, and monitoring are all field-oriented, on-the-ground work, and all are map intensive.

Most of the Bureau's information, indeed, contains a spatial component essential to relating different resources, constraints on use of those resources, and on-site activity. This fact is most evident in renewable resources, when land and mineral case work requires use of renewable data it's aways manual at this point. Land and mineral records are also used in plat and map graphing form much of the time. Integrating spatial data, that is compositing into a single processing set, the different map themes, such as U.S. ownership and maps of high valued renewable resources, is a crucial function that is difficult and expensive using manual methods. As resource values rise and competition for the resources increase, cost in the time for manual analysis involving several offices is very expensive. The applications that we addressed--Eric addressed earlier with the Primes and the Data Generals are an indication that automated geographic information systems are already being used in a number of areas to accomplish the Bureau's mission.

The land acquisition map is shown here in foil four of the Principal Meridian Map and the shaded areas indicate that land which was, in the past or is still, in federal ownership. You'll notice that it excludes the state of Alaska--I'm sorry--the state of Texas and the states formed from the original colonies. The Bureau is record keeper for



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PRINCIPAL MERIDIANS
AND
BASE LINES
GOVERNING
THE UNITED STATES
PUBLIC LAND SURVEYS
1968

DATES INDICATE ESTABLISHMENT OF INITIAL POINTS OR FIRST SURVEY

OVERHEAD #14

all of the shaded areas for the land and minerals.

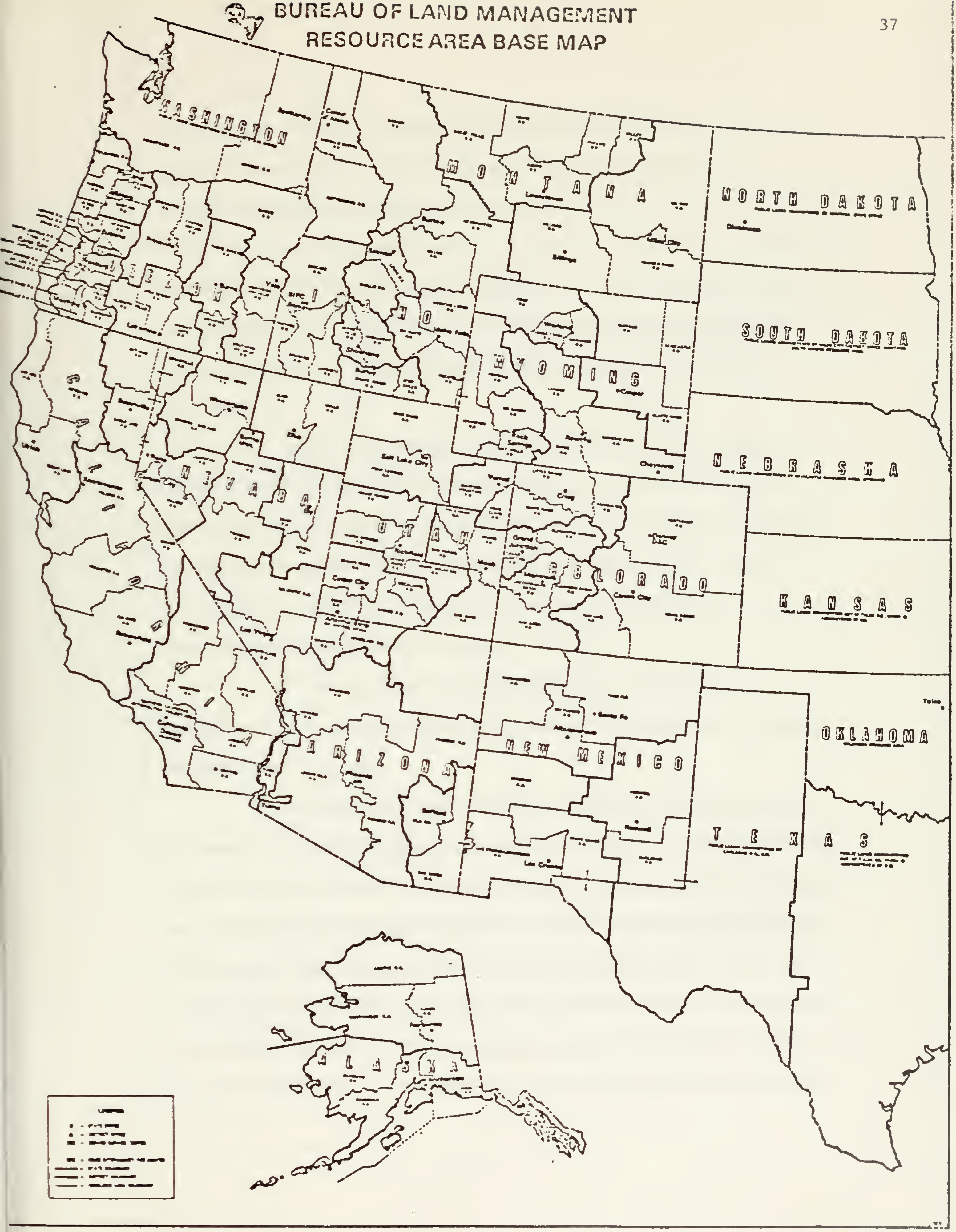
The next foil indicates the boundaries for resource areas throughout the Western 11 states and Alaska. You'll notice that it grows kind of thin on the East side. Those states are administered by the State Offices in the Western states, and its quite a ways for some of those area managers--for instance, South Dakota is part of a single resource area so; whereas, we are talking pretty thin there, some of those folks get to do a lot of travel.

Field offices--well, there is one additional state that's the Eastern States Office and it administers 31 geographic states. Field offices which do case work and on-the-ground mission work includes 12 State Offices, 58 District Offices, and 145 Resource Area Offices. The line of authority is from the Headquarters Office in Washington to State, District, and Area Offices.

The distribution of the Bureau's workforce is directly related to mission and workload activity and public land areas where the land, mineral, and renewable resource values and activity are found. The percentage distribution of Headquarters, Service Center, 12 Administrative States is shown in foil six. This is the number of--well, its the percentage of the employees and ranges from 2.2 percent in the Eastern States Office to 17.9 percent in Oregon. You can see many of the energy states are also among the high percent states. It is discussed in the RFI, 18 percent of the system user activity is expected to be in the 12 State Offices, 48 percent in the 145 Resource Area Offices. The Districts also have a substantial percentage of activity. So, when we talk about on-the-ground distributed organization, most of the activity, indeed, occurs in what many of us would think to be the small towns in remote locations.

The system used distribution and higher use of coordinate data for spatial data analysis and map graphics outputs are factors resulting in the feasibility study finding

BUREAU OF LAND MANAGEMENT RESOURCE AREA BASE MAP



OVERHEAD #15

that lower costs for a distributed system by the FEDSIM people, as Eric reported to you earlier. The distribution of the workforce by program activity you will see is pretty substantial in the land and mineral programs and that generates some--well, the last report that I looked at was a billion sixty million dollars in a given year. That revenue is collected by the Minerals Management Service and generated from the oil and gas mineral leasing activity on Bureau lands. And of course, we say Bureau lands, that also includes other federal agencies where the Bureau has leased oil and gas under lands which they administered.

Specific work activities, we can spend a lot of time on, but I wanted to highlight a couple of contrasts for how things are done currently, and how we would anticipate the automated future system to operate. Much of this information, indeed, was triggered by your responses which indicated the need for more information on the business model for operating concepts of the Bureau, and how work is done in the Bureau that is being proposed for automation.

The Bureau is now doing a work breakdown analysis and Data Flow Diagrams as a part of preparing systems specifications and a statement of work. Eric has described some of that earlier.

Detailed analysis of current work is in processing oil and gas provides a brief example here of how the lease application is now processed. It is received manually, status records (that is prior title exchanges and use authorizations in the same or different case type authorities) are examined manually. There is no automated access to that, and this involves searching manual records, and I didn't bring slides to show you of this, but there are public rooms in the Bureau where this information is accessible to the public that contains large volumes of the kind of documentation you see around the room. Master titles, plats, historical indices, serial register pages with chronological information on other cases in the area which need to be examined. These are also working records for case processing people, adjudicators, land law examiners today. Then there are other kinds of manual searches that need to be made. Stipulation files have to be examined for constraints and limitations that are appropriate to protect the environment and other resources in the area. Frequently, mailing information from the State Office to the District to the Resource Area and back is necessary because the only complete set of land and mineral records exists in State Offices, and the resource information is only maintained in Resource at District Office sites.

So, the case file and case processing occurs at many sites. Often we're often close to the land where on-site field inspections need to be made and ranges all the way back to a State Office which can be considerably removed but the office of official record at this point. Integration of resource data and case data must bring together data from all three offices and integrate it, and today that's essentially a manual processes, very labor intensive. Part of the response to this then is to automate the spatial data so that we can integrate resource information for the land and mineral case lands and do this with telecommunications to share data or have multiple copies of the data base at different sites available for access there.

Use of computers to analyze this data to validate or invalidate specific actions and pending applications or events in an authorized case we see as being very labor saving and cost saving at this point. Examples in land and mineral cases regarding use of resource data are generally less complex than resource cases--renewable resource cases because the forest and range vegetation, for instance, does not occur in the regular areas. They're found in a rectangular public land survey, but in biologically determined boundaries, which are, indeed, irregular and require some specific mapping.

The proposed system will be used by personnel with expertise in lands,

CURRENT BLM WORKFORCE

OFFICE	PRECENT OF TOTAL
WASHINGTON	5.0
DENVER SERVICE CENTER	5.0
BOISE (INTERAGENCY FIRE CENTER)	1.9
ALASKA	8.5
ARIZONA	4.9
CALIFORNIA	7.5
COLORADO	7.1
EASTERN STATES	2.2
IDAHO	5.1
MONTANA	6.2
NEW MEXICO	8.3
NEVADA	5.9
OREGON	17.9
UTAH	6.0
WYOMING	8.5
	100.0

CURRENT BLM WORKFORCE

GROUP NUMBER	RESOURCE/REGULATIONS	PERCENT OF TOTAL
11-14	ADMINISTRATION AND MANAGEMENT	13.4
15	DATA MANAGEMENT ADP	2.8
16	PLANNING	2.3
20-29	LANDS INCLUDING RIGHTS OF WAY */**	11.7
30-39	MINERALS O&G GEOTHERMAL MINING CLAIMS **	19.6
40	RANGE ***	11.7
50	FORESTRY ****	11.8
60	WILDLIFE	3.6
70	SOIL AND WATER	2.8
80	RECREATION, CULTURAL/HISTORICAL, WILDERNESS	5.2
91	ENGINEERING: SURVEY CONSTRUCTION MAINT	3.6
92	FIRE PRESUPPRESSION/SUPPRESSION	6.2
96	CADASTRAL LAND SURVEY	5.3
		100.0

* Land and Mineral activity accounts for about 23 percent of direct BLM revenue collection.

** Minerals generates about $1 billion revenue/year which is collected by Minerals Management Service.

*** Range activity accounts for about 7 percent of BLM revenue.

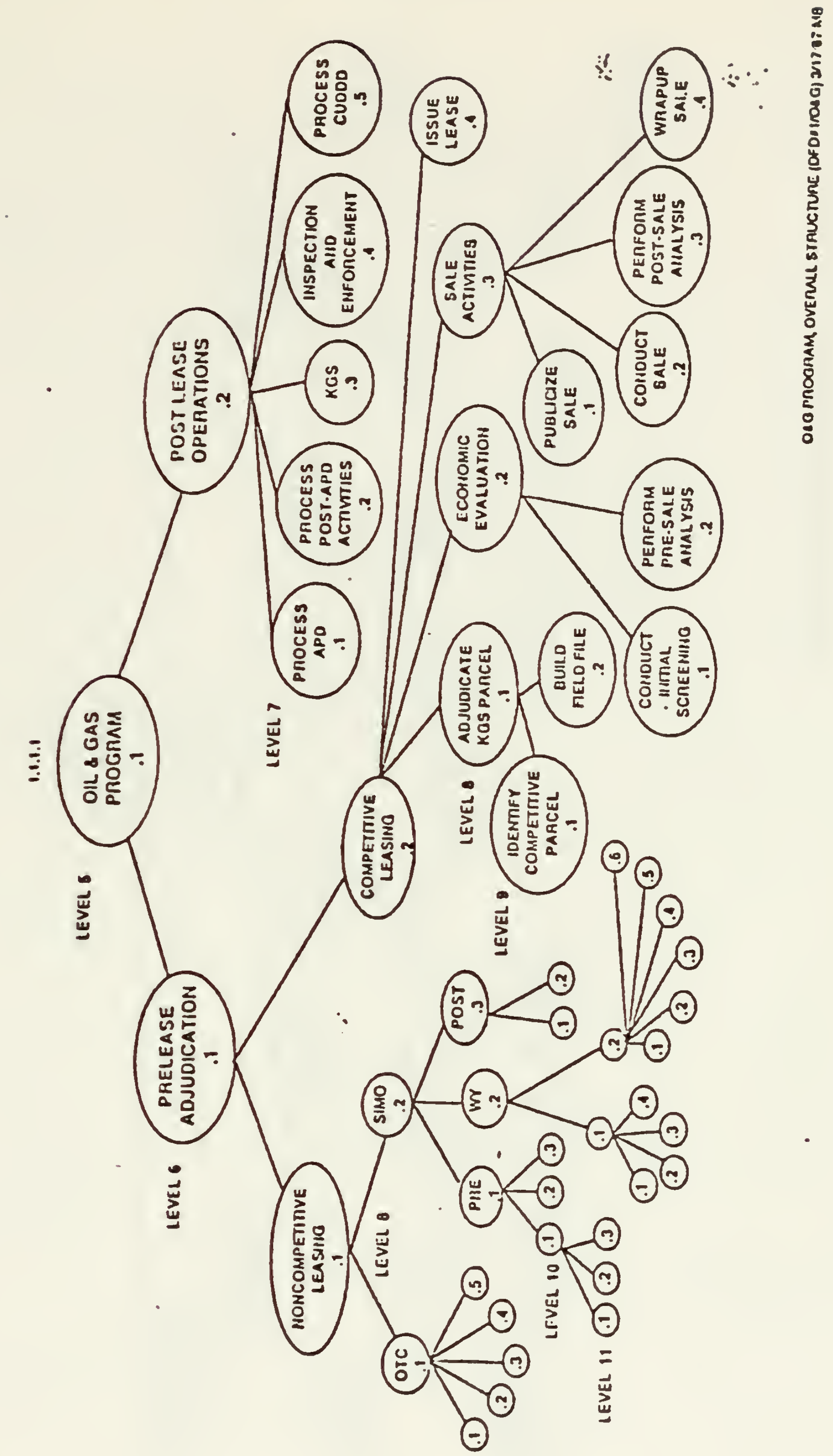
**** Forestry activity accounts for about 70 percent of BLM revenue.

minerals, and other resource management discplines, but frequently with little training in data processing. Public users of the system will generally have even less skill in data processing and will frequently be first-time or infrequent users. That doesn't give you the full picture because we have public rooms in all of the offices and they're in State Offices because that's the only place where land and mineral records are now maintained and available, and many public room users represent segments of the user clientele that the Bureau does business with, in land and mineral cases, for instance, and in one office there is a gentlemen who arrives with his staff of three in a car everyday, works in the public room, uses the pay phone, and essentially puts in 40 hours of work with his staff in our public room. There are those kinds of public users and, of course, we would expect that they would become pretty adapt at using the system. They may also use the system from terminals not at the Bureau's site. Ad hoc queries are anticipated to make up 50 to 80 percent of the use. Spatial data analysis and graphic outputs are expected to make up between 25 and 40 percent of the outputs, and there again, highest volume of these will occur at District and Area Offices.

Some examples of the Data Flow Diagrams are shown in these two--well, three foils. This is a visual table of contents, if you will, of several levels of case processing. This happens to be an oil and gas case, and this I should emphasize is current system. The next foil is also the visual table of contents which directs you to much more detail and explicit processes. This foil indicates some of the processes and relationships for inspection and enforcement activities with oil and gas cases. Finally, the last foil shows data flows for three land exchange cases processes and we are looking at a much busier set of data flows in this example.

The current system DFDs can be used to define future system processes, man-machine boundary design, and other system design functions.

OIL AND GAS PROGRAM VISUAL TABLE OF CONTENTS



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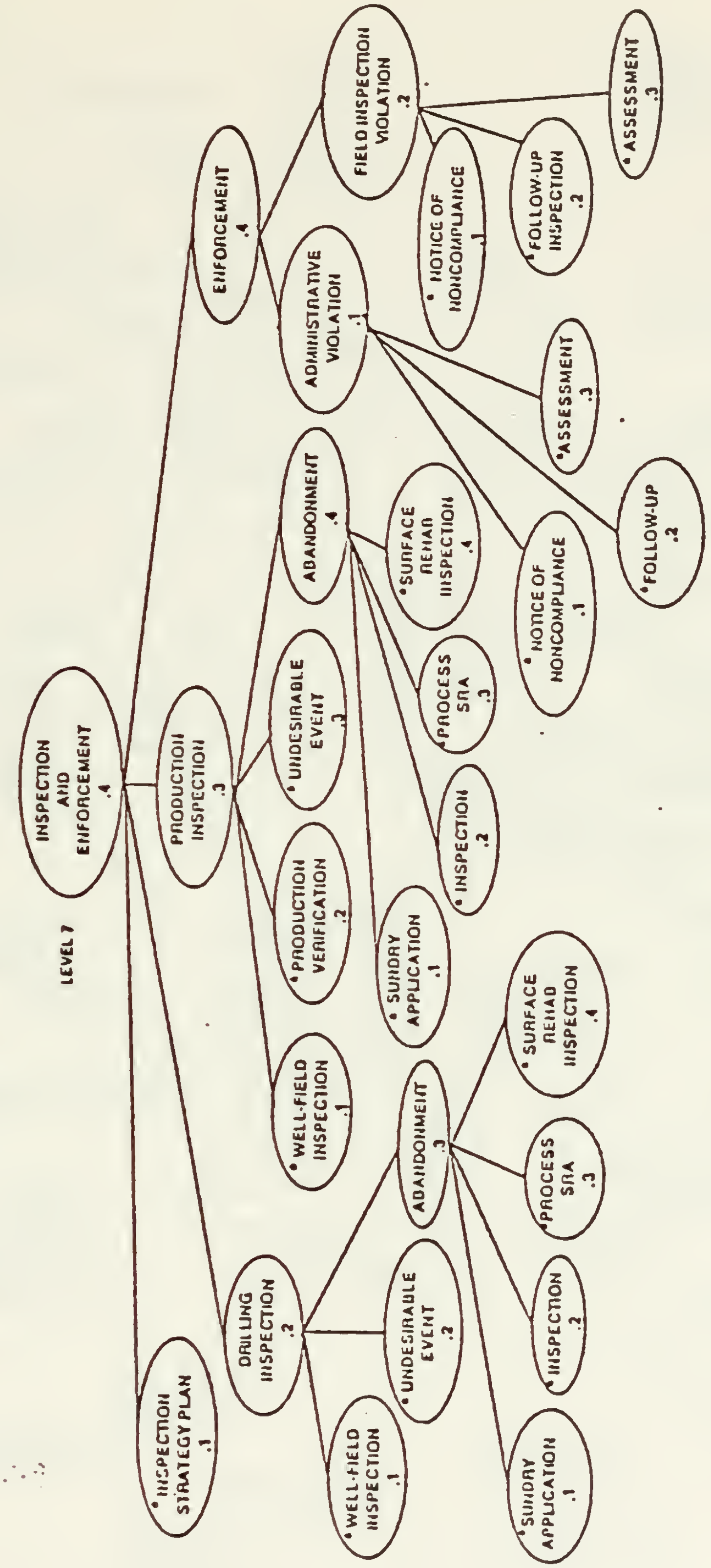
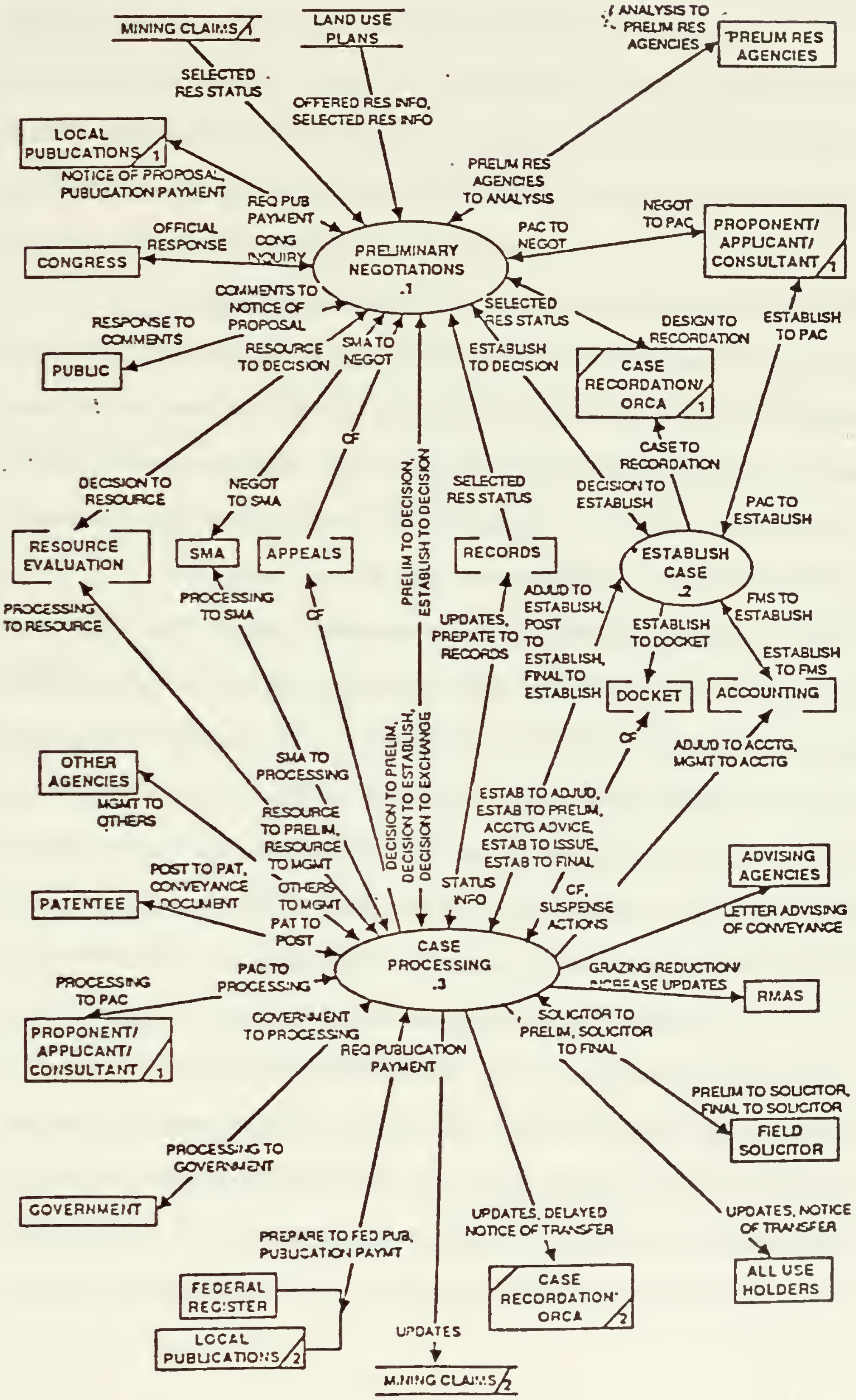
OIL AND GAS PROGRAM VISUAL TABLE OF CONTENTS


LEVEL 7
INSPECTION AND ENFORCEMENT .4
• INSPECTION STRATEGY PLAN .1
DRILLING INSPECTION .2
• WELL-FIELD INSPECTION .1
• UNDESIRABLE EVENT .2
ABANDONMENT .3
• SUNDRY APPLICATION .1
• INSPECTION .2
• PROCESS SRA .3
• SURFACE REHAB INSPECTION .4
PRODUCTION INSPECTION .3
• WELL-FIELD INSPECTION .1
• PRODUCTION VERIFICATION .2
• UNDESIRABLE EVENT .3
ABANDONMENT .4
• SUNDRY APPLICATION .1
• INSPECTION .2
• PROCESS SRA .3
• SURFACE REHAB INSPECTION .4
ENFORCEMENT .4
ADMINISTRATIVE VIOLATION .1
• NOTICE OF NONCOMPLIANCE .1
• FOLLOW-UP .2
• ASSESSMENT .3
FIELD INSPECTION VIOLATION .2
• NOTICE OF NONCOMPLIANCE .1
• FOLLOW-UP INSPECTION .2
• ASSESSMENT .3

O&G PROGRAM INSPECTION & ENFORCEMENT STRUCTURE CHART (DFD#1O&G) 3/27/87 MB

CASE TYPE: EXCHANGES
DIAGRAM NAME: PROCESS EXCHANGES
IDENTIFIER: 1.1.2.1

DFD: 1 OF 8
DATE 4/14/87
LEVEL: 4



OVERHEAD #20

The specific work task subject for automation include: tracking gravel sales; grazing leases; firewood sales; reforestation contracts, wildlife habitat; improvement projects, which might be done either by the Bureau or contractors; and an extensive timber sale program, which is concentrated in the Western part of Oregon. Some of these--that happens to be an example of a very valuable resource and other than oil and gas, it is the next highest revenue producer.

It produces approximately 70 percent of the Bureau's revenue and that ranges from $150 to $300 million per year, and so the precision of our spatial analysis in areas like that where you're looking at $10,000 trees along the line and your deciding whether its yours or not yours, and there may be a lot of trees along that line. We get very interested in forest types and boundaries and specific geographic data processing.

In summary, I want to, again, emphasize what you will hear repeatedly today that is that the Bureau's business and our operations are distributed. They're where the resources are; they're where the values are highest; it's where controversy is high; and where people want to protect one resource and another set of people wants to emphasize the use of another kind of resource. So, indeed, it is distributed. We have to be concerned with national needs. We also have to deal with our local clientele, whether it be an oil and gas operator or lessee or timber sale purchaser, coal purchaser, or rancher. So, the offices have to be distributed to where the business is, and likewise, the data that is currently used would have to be accessible where it is currently used.

The other key point that I think I want to leave you with is that the map-based operations of the Bureau are crucial. The lands and minerals class that you see here are relatively straight forward. There's squares, there's lots, they don't change rapidly with time; but in integrating this information with resource information applying resource constraints, stipulations, on-side evaluations, can be greatly facilitated by integrating the lands and minerals case processing and incorporating use of resource information going both ways. It will benefit land and minerals people, and it will benefit the resource managers.

What I've tried to do in the presentation here this morning is to fill in some of the areas which you have noted in your discussions of Section III of the RFI. I've not tried to repeat all of the information there which, indeed, does give us considerable information about resource requirements, data base sizes, number of system users, and so on in the appendix and in the text. There is a summary of the responses that I think has been on a table against the wall over here that you might refer to briefly.

It's on the second table back here, I'm told. Have you picked that up? If not, you may want to pick that up. It's a summary of your responses and it expresses the questions that were found throughout the RFI and indicates the percentage of the respondents who have agreed with the position proposed in the Request For Information. Those who disagreed, the precentage is also shown, and frequently, as in the case of the section that I was speaking about, the nature of the questions indicated what else do you need, what kinds of quantities of information are appropriate, and those who responded, responded pretty consistently with the discussion of the requirements and proposing alternatives for the information that should be contained in the information to allow you to properly respond in your proposals when those are requested.

I think that you can look through the rest of this and find the general conscensus that we see here is substantial agreement with the proposals that we are making the in the request. I certainly want to thank you for your responses and some, indeed, were very detailed and very helpful and we certainly appreciated that. One of the things that we have--I have not addressed today, but which we will be addressing in preparing the RFP, is the quantification of data communications between sites that may be involved. And of course, this varies vastly with whether its a single centralized hardware kind of configuration or whether, in fact, it is decentralized all the way to the Resource Area Offices.

Well, I want to thank you for your responses and introduce the next speaker, Dave Shaffer. He's from our Washington Office and works with Jack. We borrowed him extensively this spring, and he's worked with us on data base concepts and is going to describe those for you now. Thank you.

DATA BASE MANAGEMENT

BY DAVE SHAFFER:

Good morning, my name is David Shaffer. I'm on the staff of the Bureau's Headquarters Division of Information Resources Management.

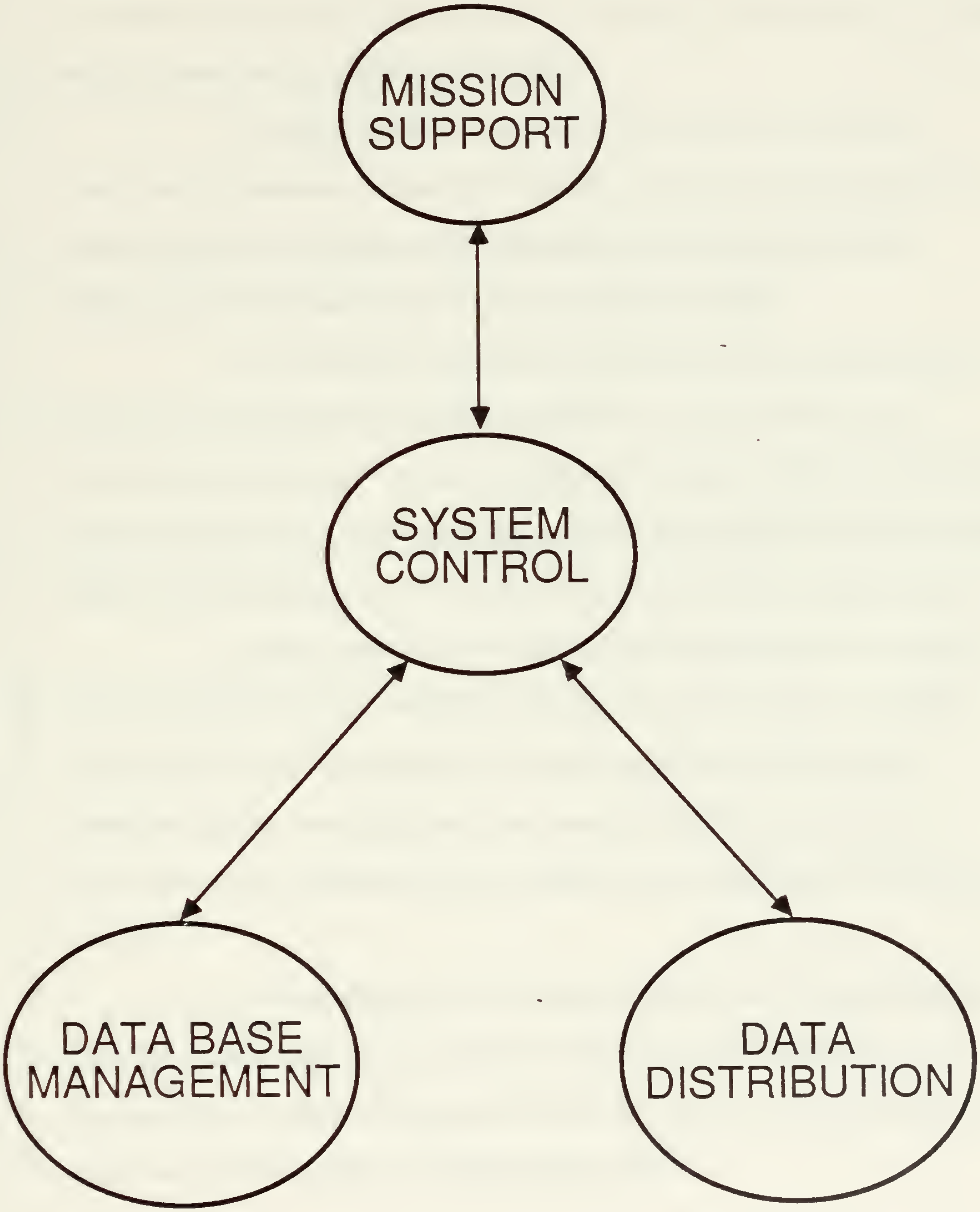
May I have the first foil, please.

The BLM has developed an ALMRS Conceptual Data Model in an effort to describe the work that the Bureau perfoms as just mentioned by Dave Nelson. This data model fits into the BLM system context in the area of data base management. The model will be used to define the data base management system requirements and specifications for the Request For Proposal.

May I have the next foil.

This model was developed using structured methodologies, known data sets, experienced Bureau personnel, and known operational considerations. The Bureau is now in the process of presenting this conceptual data model to various user groups within the BLM for evaluation. The model will be tested by identifying various problems and issues relevant to the users, and then talking--walking their concerns through the model. The model will then be revised as needed to accommodate new areas of concern.

BLM SYSTEM CONTEXT



MISSION SUPPORT

SYSTEM CONTROL

DATA BASE MANAGEMENT

DATA DISTRIBUTION

May I have the next foil.

The first objective of the conceptual model is to provide operational capabilities for processing land, mineral, and resource data. This means that the model must accommodate all the functional requirements of the proposed system, which have been defined to date, and go beyond this to aid in defining those functional requirements which may arise from the model evaluation process.

The second objective is to identify and address the technical and operational complexities associated with this project. The model has identified several areas of concern where technical complexities associated with the needed data relationships will require special care in design and implementation.

The next objective is to reduce the risks assumed by the Government and to reduce the cost of implementing the data base. The Government's risk of developing the wrong system or a poor system will be greatly reduced by modeling the system in sufficient detail to develop strong functional requirements that reflect the true nature of the proposed system. The reduced risks will lead, in turn, to reduced costs.

Another objective is to provide a data base management environment that is responsive to change. The BLM, as with any Government agency, is subject to complex, often conflicting legislative and regulatory requirements. When these constraints change, whole programs can be created or eliminated. Any data base environment used by the Bureau must be capable of handling this type and amount of change.

The last objective of the conceptual model is to minimize the impact on the ALMRS' users. Any system, no matter how good, is only of use if people use it. Because of this, the model is intended to minimize the impact on the users of ALMRS' data so as to encourage them to make the fullest use of it.

OBJECTIVES OF CONCEPTUAL MODEL

- PROVIDE OPERATIONAL CAPABILITIES FOR PROCESSING LAND, MINERAL AND RESOURCE DATA
- IDENTIFY TECHNICAL/OPERATIONAL COMPLEXITIES
- REDUCE RISK ⇨ REDUCE COST
- PROVIDE AN ENVIRONMENT THAT IS RESPONSIVE TO CHANGE
- MINIMIZE THE IMPACT ON ALMRS USERS

May I have the next foil, please.

The ALMRS conceptual data model, seen here in simplified form, is based upon the relationships of the data elements identified for use in the proposed ALMRS System. These data elements have been grouped into data sets with the groups' relationships depicted here.

The data model contains three major issues that I will discuss today. These issues are: (1) a folder in which all case data will reside, (2) a variant data structure which will allow for changing data requirements, and (3) a complex pointer index which will relate all of the data sets.

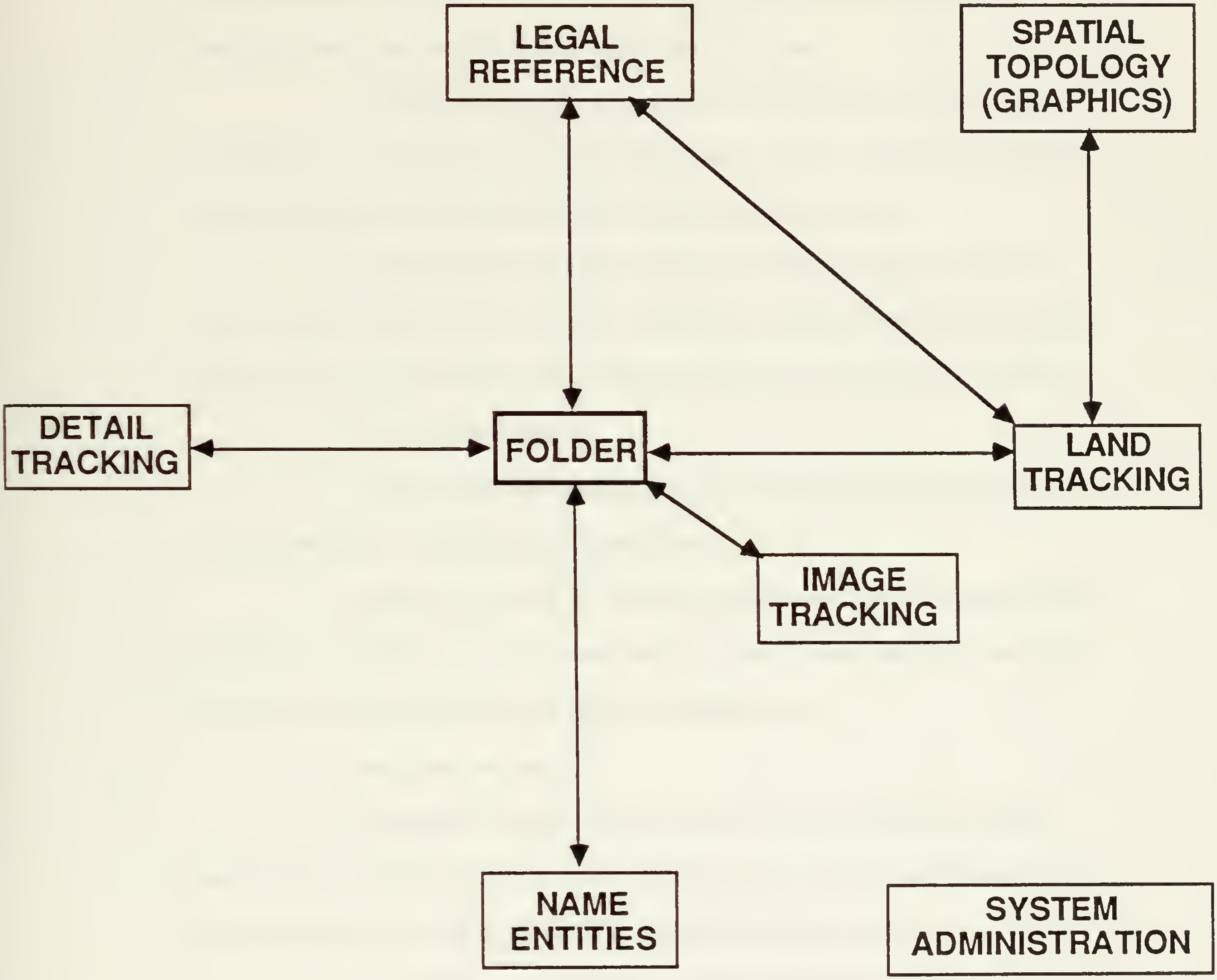
The first data set deals with system-wide administration data such as, security authorizations, menus, and on-line help data and as such has no direct ties to any of the other data sets.

The concept central to the data model is that of a folder, a single repository for all information pertaining to a discrete unit of Bureau work such as, the right-of-way case, oil and gas lease, or natural resource study. Anything that the Bureau currently puts into a paper folder could be put into an ALMRS folder. This folder concept identifies the central data set of the model. Other data sets tie back to folder to describe the work being done.

The name, entity data set, describes such things as the names and addresses of individuals or corporations associated with a folder. This includes all bonding and surety information, as well as data on corporation stockholder relationships for acreage control purposes.

The image tracking data set describes indices to any type of image associated with a folder from landsat photos to microfiche. This data set would not contain the images themselves, but would track enough information about them to allow

1. ALMRS CONCEPTUAL DATA MODEL



LEGAL REFERENCE

SPATIAL TOPOLOGY (GRAPHICS)

DETAIL TRACKING

FOLDER

LAND TRACKING

IMAGE TRACKING

NAME ENTITIES

SYSTEM ADMINISTRATION

complete cross-referencing to other data in the folder.

The legal reference data set describes the legal grounds for any action taken in a single folder, or on a piece of land, which may result in more than one action on more than one folder. This includes U.S. Code and Code of Federal Regulation References, as well as case law and IBLA decision references.

The detail tracking data set describes the details of all events, actions, commodities, and dispositions of cases associated with a folder. This includes data such as, when a patent was issued and what commodity was leased or sold.

The land tracking data set describes the basic rectangular land net, as well as special surveys of all Bureau lands. In addition, this data set has ties to the spatial topology data set which describes the graphic representations of Bureau land records.

May I have the next foil.

A second major concept found in the data model is that of variant data structure definition. This concept is illustrated here.

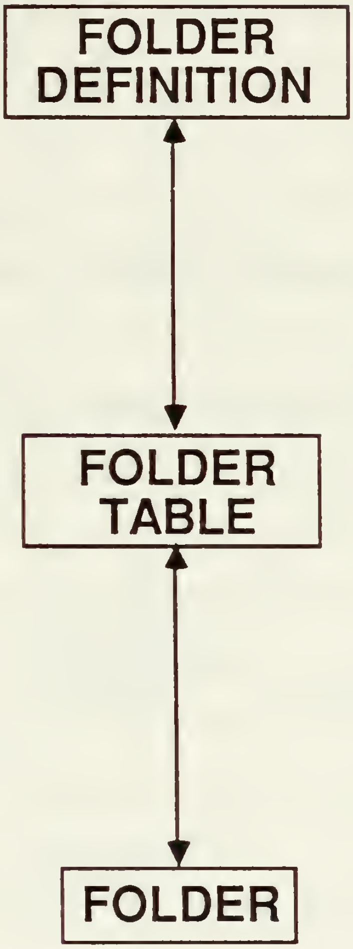
Folders are made up of records of various types that are described in the folder table. Each folder type in the folder table has a set of folder definition records that describes the structure of the variant data for that folder type.

May I have the next foil.

Each folder contains a folder code which references the folder table. This folder table record, in turn, references a set of folder definition records each of which describes one of the variant data structures in the original folder record.

The major advantage of this technique is the ability to change the data makeup of any one type of folder record simply by defining a new set of folder definition records and referencing this new set in the folder table. Thus, as data requirements change, the old data structures can be retained for historical reference and new data

2. VARIANT DATA STRUCTURE DEFINITION - DATA STORE

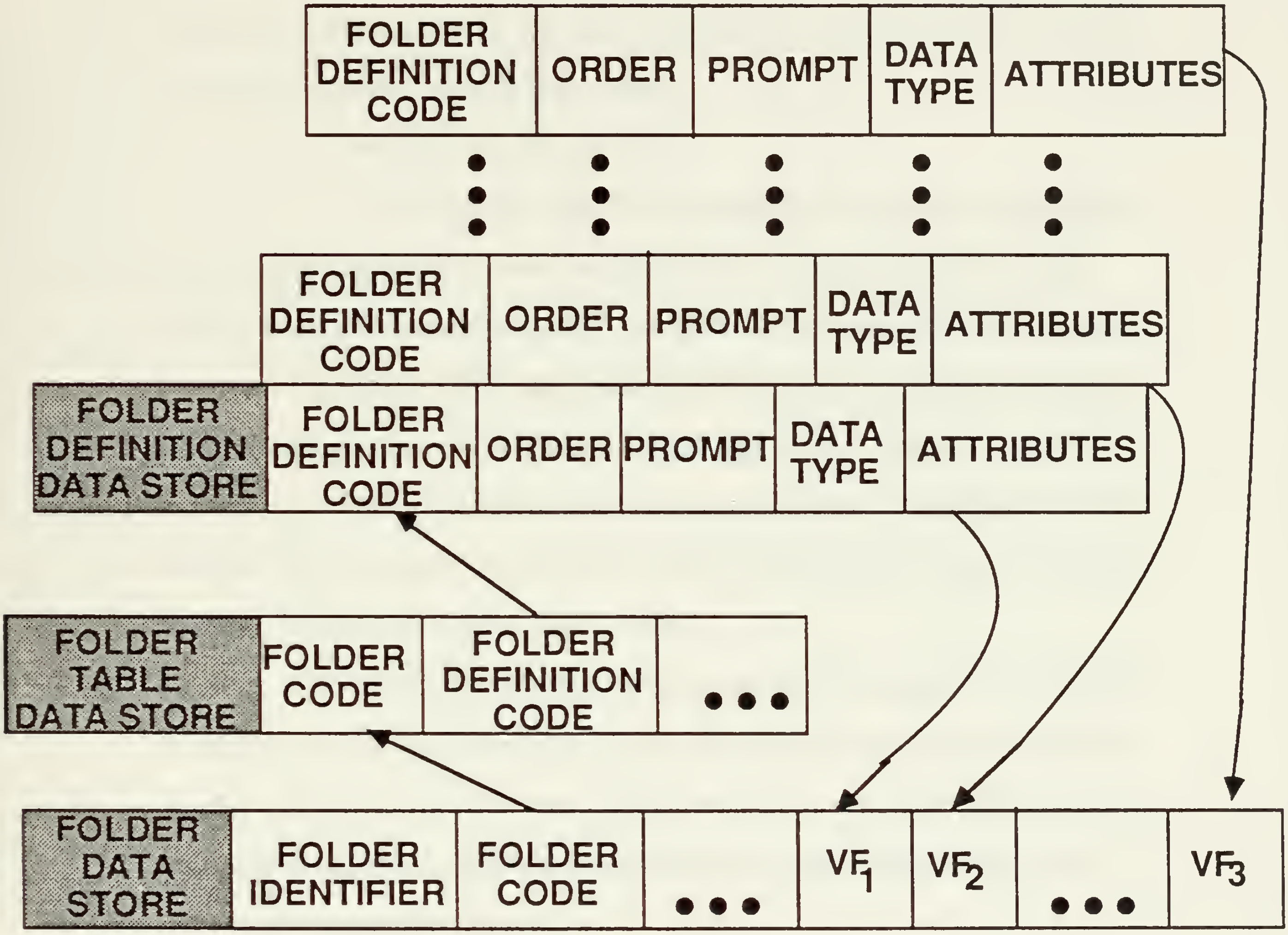


FOLDER DEFINITION

FOLDER TABLE

FOLDER

3. VARIANT DATA STRUCTURE DEFINITION



FOLDER DEFINITION CODE | ORDER | PROMPT | DATA TYPE | ATTRIBUTES

FOLDER DEFINITION CODE | ORDER | PROMPT | DATA TYPE | ATTRIBUTES

FOLDER DEFINITION DATA STORE | FOLDER DEFINITION CODE | ORDER | PROMPT | DATA TYPE | ATTRIBUTES

FOLDER TABLE DATA STORE | FOLDER CODE | FOLDER DEFINITION CODE | • • •

FOLDER DATA STORE | FOLDER IDENTIFIER | FOLDER CODE | • • • | VF_1 | VF_2 | • • • | VF_3

structures can be put in place at any time with no changes to the underlying software.

The major disadvantage is that, to our knowledge, no commercial DBMS is currently capable of handling this type of variant data structure. It might be possible to achieve the needed level of data structure flexibility without using variant data structures. If this were possible, then the variant data structure technique would serve only to define the extent and nature of the flexibility needed.

May I have the next foil, please.

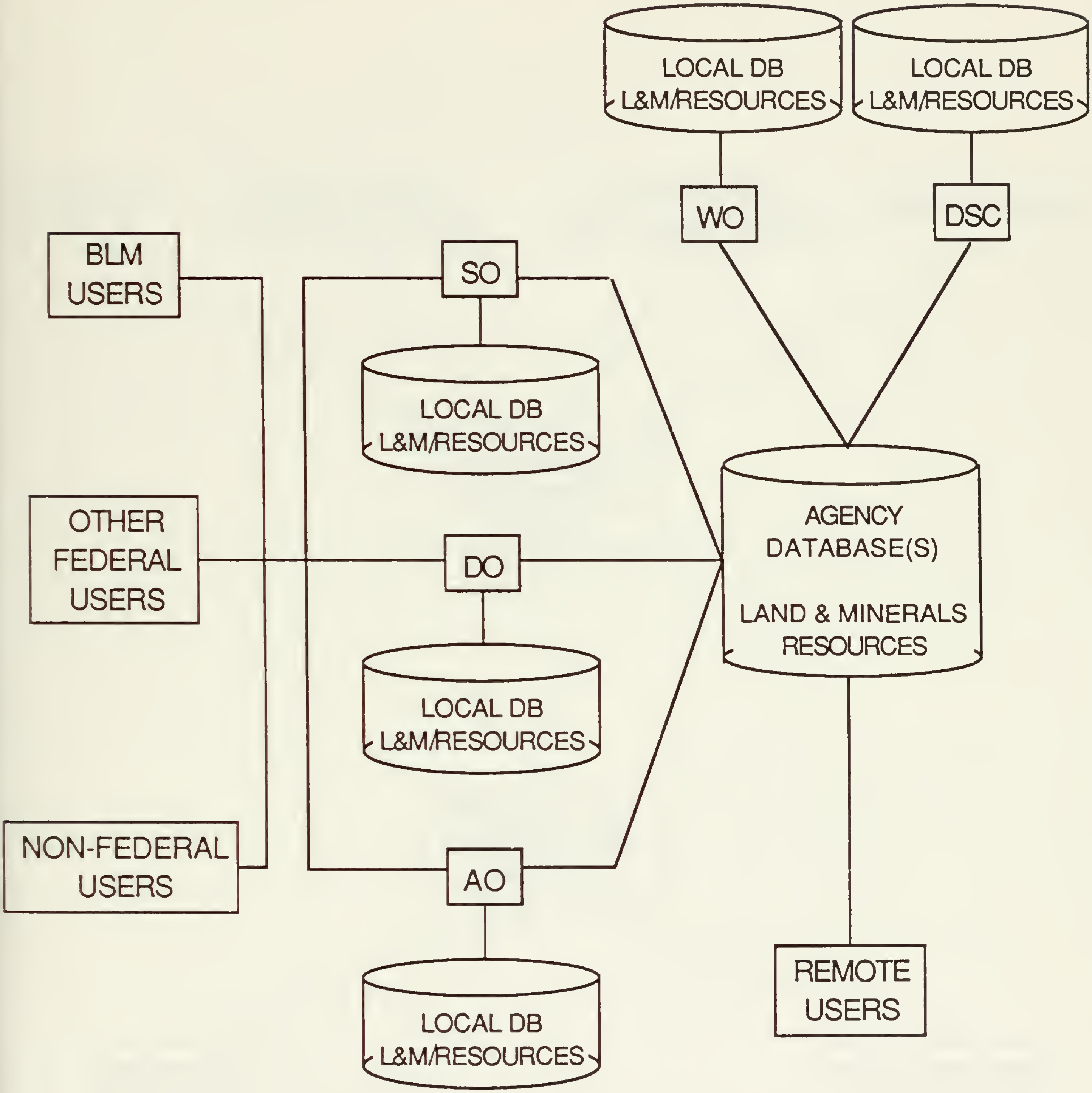
A third major component of the data model is that of a very large and very complex pointer index which relates the folder, detail tracking, legal reference, land tracking, and spatial topology data sets. This pointer index is mentioned only because of its size and the number of data sets it relates. In the full model, this index relates up to 12 different data sets taken 1 to 12 at a time. There are over 4,000 total combinations of pointers, if each data set had only one distinct record of interest. There probably will be many records of interest in each set, so this should be considered a minimum number of pointer combinations to be related by this index.

Construction and implementation of the system based on this data model will require some important design decisions to be made by the vendor selected in the ALMRS' Software Development Request For Proposal. Among those decisions will be the determination of the usefulness of a distributed data base management system in meeting the needs of the system.

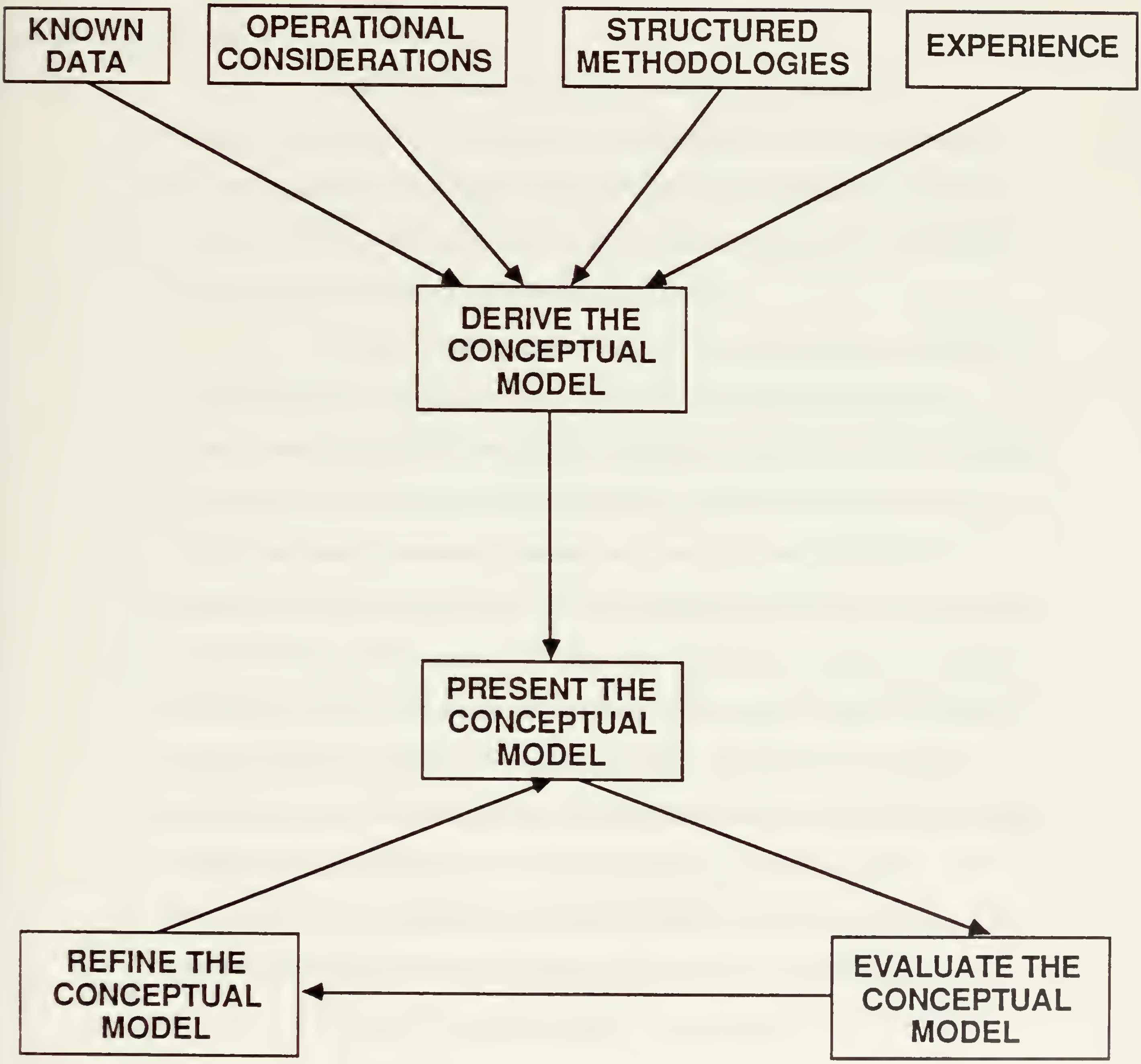
May I have the next foil.

The BLM, as stated before, is a geographically distributed organization with 142 physical locations in the 11 Western states, Alaska, Oklahoma, Wisconsin, Mississippi, Virginia, and Washington, D.C. This wide distribution of offices complicates the ability of the Bureau to keep its distributed records current. The new ALMRS System

4. DATABASE(S): USER ACCESS - OFFICES - DATA STORES



CONCEPTUAL MODEL CONSTRUCTION



KNOWN DATA

OPERATIONAL CONSIDERATIONS

STRUCTURED METHODOLOGIES

EXPERIENCE

DERIVE THE CONCEPTUAL MODEL

PRESENT THE CONCEPTUAL MODEL

EVALUATE THE CONCEPTUAL MODEL

REFINE THE CONCEPTUAL MODEL

proposes to use a relational DBMS and possibly multiple distributed processors to improve the access to these records.

As a result, any data base management system considered for use by the Bureau must accommodate data concurrency and synchronization of any multisite processor and data storage configuration. One such possible configuration is depicted in this foil.

A complicating issue is the sheer size of the data base to be implemented. Land and mineral data alone, with duplication of storage, is estimated to require 150 gigabytes of non-spatial data, and 387 gigabytes of spatial data. This data is distributed with about half of the data at 12 State Offices, about 20 percent at 58 District Offices, and the remaining 30 percent at 145 Area Offices.

One way to achieve this goal is to adhere to the suggested standards of transparency that are emerging in the industry today. These types of transparency include: retrieval transparency, where a query can retrieve data from any node, regardless of its location within the network; update transparency, where data at any node may be updated, with proper permissions, from any other node in the network; schema transparency, where schema commands can be executed from any node with their results visible at all nodes; performance transparency, where commands from any node may be executed at any other node that provides sufficient performance to maintain the level of command response required by the system as a whole, as determined by query optimization; transaction transparency, where a single transaction at one node can update multiple nodes, via a serialized two-phased commit process; and lastly, copy transparency, where multiple copies of data base objects are maintained to provide high availability of all distributed data, even if some nodes become unavailable.

Adherence to these standards will not preclude the use of other compatible technologies, where appropriate. An example of this would be the use of a requester-server design to access remote data bases, thus reducing telecommunication costs, instead of direct remote data access, via a distributed data base.

Also, since the system will contain spatial data, as well as alphanumeric data, perhaps some combination of data base technologies would best meet the requirements.

May I have the last foil, please.

In closing, let me say that data modeling is being used to produce a clear picture of the functional requirements necessary to fulfill the Bureau's mission. This effort has produced an opportunity for the Bureau to implement a broad corporate-based data base management system that will meet the needs of the BLM well into the 1990s and beyond.

Thank you for your attention. I would like to introduce John Wong from the ALMRS/GIS Project Office, who will speak on the use of data standards.

STANDARDS - BLM SYSTEM CONTEXT

BY JOHN WONG:

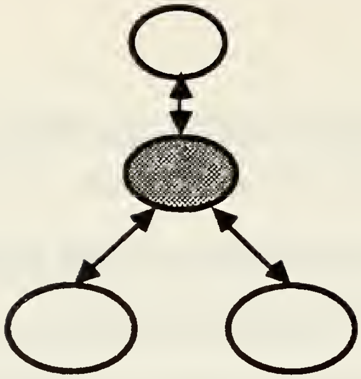
I'd like to do a final attempt to humor you with an early settler joke. What happened was we had a severe winter back in the '80s, that was the 1880s, and there were a group of settlers out here on the plains and the leader of the group said, "Well guys we've run out of food and water and fuel. That's the bad news. We are going to have to make due with buffalo chips. The good news however, is we have an abundance of buffalo chips."

So, I would like you all to turn to your blue folder, and in the back you will find this first foil that is going to come up. We are going to talk about standards. Now, the remark that I would like to make is that I suggest to you, some of the vendors out there, have taken to the idea of standards with roughly the same amount of enthusiasm as our early settlers.

Okay. Let's get the first foil up. System control. The first thing you're going to see on here is--we are going to go through the four circles up there, which by now you should be able to cite by heart, and what I would like to talk to you about in these four circles is first we will go with system control, and I would like to talk to you about why standards, and I would like to talk to you about the thing that we call a system subexecutive, and then I would like to talk to you about data management, what Dave basically has gone over with you in terms of our DBMS capabilities and using the standard called SQL. Then I'd like to drop down to the data distribution circle and talk about putting the computing power where the work is, and then talking about another standard, the ISO, and then lastly, I want to do a quick wrap up on the top circle, mission support, and give you an idea of applications with respect to the different kinds of data types and some of the other stuff we want to do with it like decision support, management information reporting, and finally computer-aided instruction.

So, let's start with this first one here. Why standards? I think that the primary--there are three big reasons why we are worried about standards. The first one is hardware independence. Now, as Jack told you before, we have140 vendors. Now I don't know what the precentage is, but it's awfully high, that in those 140 vendors, not one talks to the other, at least not very well, in terms of their machines.

The second is that in conjunction with hardware independence we want to preserve our software investment. Now, it seems to me that if ORACLE can preserve its software independence on disparate operating environments that the Government can probably do with less effort on a common operating environment. And then finally, the third point is that we want to maximize the accessibility of our data to outside users.



SYSTEM CONTROL

Operating System: Posix IEEE 1003.1

    maximize portability

System subexecutive:

- Common end-user interface
  - XWINDOWS, menus
- Security

Portable C connecting interfaces

System management/utilities

Now, if you look at the–if you think back to the B/C ratio that we put up earlier, by far we get the most bang for our buck and we include all users. I think that was one point made– something like that. Three, I'm sorry. And what we want to emphasize with the use of standards is that anyone who wants to can have access to our data easily. For those of you who have gone through the experience of getting a tape from Mars or some other alien place and trying to make sense out of it, we want to minimize it. We want one common operating system, and the watch word here is to move towards POSIX conformance, which is the IEEE 1003.1 portable operating system that is UNIX-like that's not owned by any particular vendor, and that we are aming towards . Okay.

The next thing is that we are looking at a system subexecutive. Think of a system subexecutive as the interfacing software between all the surrounding modules, and this system subexecutive is going to have a common end-user interface. The idea behind that is that wherever you happen to be, whatever location, if you come in as a rank, no computer experience user, you will get the same menu wherever you are as you would any place else, State Office, District Office, Area Office, it doesn't matter, wherever the machine happens to be.

If you come in as an advanced user and what you happen to be used to is not necessarily command menu driven, but let's say it's command driven, you'll see the exact same interface. With reference to this common end-user interface, we are looking at things such as, X-Windows, menus, as I said before, commands, and mice.

The second thing that this system subexecutive is going to do, is its going to ensure security, because as was mentioned before we have proprietary data on the system. Proprietary in terms of Indian tribes, proprietary also in terms of what corporations have what leases and are pumping at what rates.

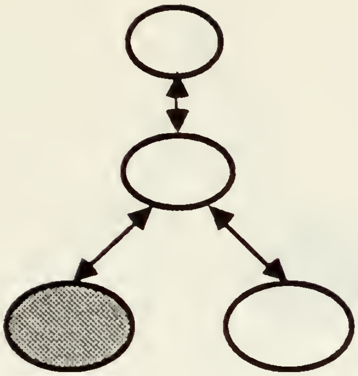
Okay. We are looking at Portable C connecting interfaces. Now, the reason why this is important is that following the OMB guidelines now to go with as much commercial off-the-shelf software as possible, we are looking at a commercially available off-the-shelf relational data base system. We are looking at commercially available off-the-shelf graphics packages. We're not limiting them, we're not specifying them, we're only specifying the requirements that these packages need to meet.

We know that these packages are not going to meet them all, but we also know that what we do right we would like to have written so that again we preserve our software investment. And again, hey, if ORACLE can do it on desparate environments with Portable C, then that seems to me a reasonable way to go for us as well. So, we're looking at Portable C interfaces between whatever these commercially available packages are that you are going to propose. And then finally, in the UNIX-like environment we have system management and utilities that make it, I think, a little easier for us to manage if its--if your looking at things that are remotely, things like *make*, things like SCCS, combinations of those, combinations of those with *at*, that kind of thing.

Okay. Let's go to the second one, please.

We have already talked about--David Shaffer has already talked about RDBMS capabilities, namely with respects to the invariant, I'm sorry, with the variant record concept which is instead of defining the fields we define the definition of the fields. The reason that's very important to us is that over half of the system is going to be used for ad hoc queries, and we want to look at response times that are, again, reasonable and so what we're looking at in terms of making it as reasonable as possible, is first off, to do what we can with the SQL, with structured query language interface, and then secondly what needs to be done beyond that. Again, we refer to our Portable C connecting software.

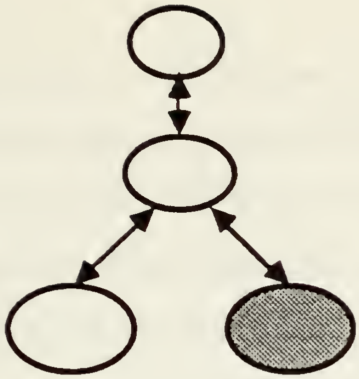
Okay. Let's go to data distribution. I think by now you've come to the realization that the Bureau of Management is pretty vast in terms of the amount of land it manages, where it manages that land, and the kinds of users. And so, again, our idea



DATABASE MANAGEMENT

RDBMS capabilities

Structured Query Language (SQL)
interface



DATA DISTRIBUTION

Putting the computing power where the work is.

Standard: ISO Open System Interconnection Reference Model

TCP/IP → OSI

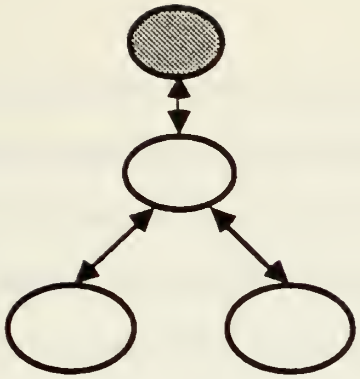
here is putting the computing power where the work is, however that comes out. We don't think it's going to come out a computer on every desk. We don't think its going to come out a centralized mainframe. That doesn't mean you can't propose it. It's like Eric said before, we make no restrictions on what can be proposed. But if a distributed system is proposed, and indeed we are putting the computing power where the work is, then in terms of the data comp standards we are looking at TCP/IP and the migration to the OSI open system interconnection reference model.

Now, as Dave Lyons has pointed out, we've got--we've started this thing early in our life cycle so that all the vendors out here can have a start, can have an idea of where we're aming so that if they care to conform, that's great.

Okay. Lastly, mission support. Again, as has been pointed out, we have two kinds of data, basically, that we are working with. We are working with alphanumeric and alphanumeric source base. Now, what I mean by that is that we are going to try to allow our users to do all of their updating, all of their storage, all of their manipulation in English. And that's what I mean by an alphanumeric source.

This alphanumeric source, and some of the work that we have done right now, is converted into spatial graphics. Now by spatial graphics we mean those graphics--that class of graphics which allow us to tie points to points on the earth, so that when we have our people go out on-the-ground and they use a map, the map is actually a map. So that when you look at themes and you look at conflicts, these themes are accurately registered on top of each other, so that, again, they are tied to places on-the-ground because that's where the conflicts arise and that's where they're resolved.

With reference to the spatial grahics we are looking at the GKS standard, and we're looking at packages that follow that particular standard, at least we have in what we have done so far. The second thing that--now, these are the main applications. This is



MISSION SUPPORT

Applications:

Alphanumeric "source" base

Spatial GKS Standard

Decision Support

Management Information

Reporting

Computer-Aided Instruction

the meat and potatoes of what we are all about, and ciliary to that, peripheral to that, but no less important to that, is our decision support. We--I look at the Bureau as basically doing legal work. We have a folder out there, and that folder gets built up to a certain point where the folder is either closed or it's left pending. One or the other, and as the process goes on, we need information to make decisions about it. That decision support comes from your first applications. It comes from the heart of combining in an accessible manner, easily accessible manner, those two types of data.

Also from that particular heart, we have the management information reporting that's necessary just to do the work of the day as a Bureau, and then finally, something that we think would help all the users on the system is that we would also like to see computer-aided instruction as part of the system that will teach the user to use it.

Okay. If you look at the--at what we have done--can you put the context chart back up, please. Just the big one. We started out talking about the system control, and in terms of system control we have said that we would like to see migration to and conformance to the POSIX IEEE 1003.1 common multi-vendor operating system standard. We have also talked about the subexecutive. That subexecutive will control a common end-user interface. We are thinking about X-Windows, we are going to use menus, mice, commands, whatever is appropriate. The subexecutive is also going to be in charge of security.

We have talked about Portable C connecting interfaces, and we've talked about using automated tools within the operating system itself for system management and utilities. If you look at the one on the bottom, data base management, again, we reemphasize we're looking at our DBMS capabilities, as Dave said, we don't have anything on the market quite just like it just yet. But, we are looking at the ability to combine very, very complex data types and make them accessible; and we are looking at that because over half of the system is going to be used for ad hoc queries. So far as possible, we will squeeze every last drop of functionality out of a SQL, Structured Query Languge Interface.

Going down to the bottom on data distribution. If a distributed system is indeed proposed then we are looking at putting the computing power where the work is, and in that respect we are looking at the--using the TCP/IP protocol currently and migrating to the OSI standard.

Finally, in terms of mission support, we want to reemphasize that the application is the heart of what the ALMRS Project is all about. That application concerns itself with two data types, alphanumeric source base, which allows the user to update, modify, do all of his work in English; and a spatial data type, which conforms, so far as possible, with the GKS standard; and from these applications we will, of course, derive decision support, management information reporting, and then finally, in ciliary to all of this, is some way for the system to teach users how to use it with computer-aided instruction. So that's it for standards. Bob, how are we, is it lunch time? It's lunch time, my goodness.

BOB LEOPOLD:

Okay. You've heard the Bureau of Land Management like I have mentioned in my opening remarks. If you have specific questions that you want to ask us this afternoon, I'm going to ask you to take a couple of minutes, organize your thoughts, ask your questions along these lines, mission support, system control, data base management, and data distribution. Categorize them in those four major entities.

Okay. Have a good lunch. We will see you back at 1 o'clock. 12:30 we will be showing the presentation that we gave Secretary Hodel so we invite you back then, if you so desire. Otherwise we will see you here at 1 o'clock. Have a good lunch.

(Lunch was taken from 11:30 a.m. to 1:00 p.m.)

AFTERNOON SESSION, WEDNESDAY, MAY 27, 1987

(The RFI Conference reconvened at 1:00 p.m., with 184 participants present, a panel consisting of eight members, and the following proceedings were had:)

QUESION AND ANSWER SESSION

BOB LEOPOLD:

Well, I hope everybody had a good lunch. Denver needs the money, believe me. A couple of housekeeping duties that I need to do. You'll find in your blue envelope with the ALMRS cover the order form. That order form is specifically for the video that some of you just saw at 12:30. The other one is for the transcript, which Tina is doing as we speak right now, plus the overheads that you have seen. So, you don't have to necessarily sign up today, but if you desire those, we'll make them available to you. So that order form is in your packet.

Okay, this afternoon is kind of a two-part session. Number one, we've got about 50 questions out of 60 or so that we have gone through. We have perhaps gotten rid of a couple duplicate ones, but we are going to go through each one of these individually. I will not mention the name of the firm, the company, or anything else. I'm just going to merely state the question.

If I state it improperly and anybody has a problem with it out there who wrote it, please let me know that or its unclear to anybody, please let me know that. After we go through that, my judgment is that it's going to take about an hour and a half to go through that. Its going to be rather rapid fire. If anybody needs a clarification as we go through this in terms of technical substance, let us know that. Otherwise, please let us go on. At the end of that time, we'll make all the time you want available to answer any questions that you might have. Everbody comfortable with that?

Okay. What we're going to do, I'm going to read a question and we're going to ask people on this panel up here to respond, and I will do that. First one.

Q Is it possible to design and develop systems which operate in a number of environments? Why restrict competition to UNIX Systems and eliminate such solutions as VMS, IBM CMS, PRIME PRIMOS?

A (BY JOHN WONG) The idea here is hardware independence, so far as possible, over as many machine classes, so far as possible, and by machine class I mean mainframe, mini super mini. Now, were we to go with one of the suggested operating systems we would be tied to one vendor or perhaps one vendor and a couple of mainframe followers on.

Q The RFI is developed around implementation of a currently evolving IEEE POSIX standards. Assuming that all major components are adopted by IEEE later this year, what assurances exist that components of the "standard" will be implemented by AT&T, Berkeley, etc.?

A (BY JOHN WONG) None.

BOB LEOPOLD: That's it?

JOHN WONG: We're not here to force conformants we're here to say if you guys want to bid, we are in the business of approaching, aiming towards conformance with the IEEE standard as it evolves. We have no power to force, we only can say if you guys want to be bid, please consider it.

Q Is the IBM System II redefinition of the graphic standard a concern? Should this be addressed?

A (BY DAVE SHAFFER) I really don't think that's going to cause too much of a problem because the types of graphics that we're talking about in the ALMRS System really have to do more with raster base and protector base graphics not the business type graphics that the new IBM system--it is higher standard than it was in the past, but it's really not the type of graphics we're addressing.

BOB LEOPOLD: But we will have business graphics as part of our--

DAVE LYONS: We will have business graphics as part of the system at the work station level, if that's part of the design.

Q What is the time schedule for ALMRS RFP (software/hardware)? Is it the same as Modernization Plan, i.e., January of 1990?

A (BY DAVE LYONS) Well, I think this was discussed this morning. The basic--the dates are not hard. There are a lot of reviews, approvals that have to be made. We haven't even developed the Statement of Work and specifications, as of this date. So, I can talk in terms of existing plans. We are looking at the two activities/initiatives as occuring during the same timeframe if you look from now until 1991. But, the software requirement should be on the street sooner; awarded by a year from, say this September; whereas, the Request For Proposal associated with the hardware and communications system in so far as it will require live demonstration tests and such, the evaluation procedure will be extended, and that will be awarded somewhat later. The software and hardware will be available together to be installed is what we're looking at, and we're sort of using a ghant chart back from that, that it will be developed--to be installed in a pilot environment by sometime in 1991. Dates other than that are somewhat soft at this time.

BOB LEOPOLD: Can everyone hear us back there? Is the microphone all right, now? We're worried about the back row, Greg. I see yes back there. Okay.

Q Will ALMRS and its associated procurements be covered under one DPA or multiples? Will the modernization effort be covered by yet another DPA or multiples?

A (BY JACK WEBBER) The ALMRS Project will be covered by a DPA. The modernization--

BOB LEOPOLD: You need to speak up Jack they cannot hear you.

JACK WEBBER: The modernization hardware procurement will be covered by a separate DPA.

Q Will any of the software delivered under ALMRS be available in the public domain?

A (BY DAVE LYONS) In so far as we're going to request commercial off-the-shelf software, to the extent that it's feasible, it will not be in the public domain. The software that will be customized will probably be in the public domain, but we really haven't addressed the issues of rights in software as far as the clauses are concerned. In other words, it's--we will know that much better in later this year as far as what exactly what we're facing regarding licensing of software and development issues.

BOB LEOPOLD: The bottom line is we got a lot of homework to do on that one. I think all of you can probably appreciate that. It's not only a legal question but its probably going to have a lot to do with costing and a lot of other things. So, we have homework to do on that one.

Q To insure the software--excuse me--to insure the software upgradability you seem to want--let me start again. This is not a question. Let me put it in a question sense. To insure that the software upgradability you seem to want--bottom line is this--Some of you guys are doctors out there, I tell you the way you write sentences. The bottom line is this source code--are the vendors going to make it available to the Bureau of Land Management?

A (BY BOB ADER) This is also another area where we need to do a little bit of homework, but I think whether or not we require source code will depend on the level of flexibility needed in that system component, but now requiring source codes to maintain a changing system that keeps its flexibility will not necessarily mean that that software will be public domain as stated earlier.

Q Where will the Data Flow Diagrams data model be integrated or will it ever be integrated?

A (BY DAVE NELSON) Yes, we will be doing some integration of that, and they will be integrated. The next question is, when? We will continue to work on that during preparation of the RFP and that will also be a subject of design issues, which the people preparing proposals and developing the system ultimately will address.

Q How will the performance of the software be evaluated in consideration of the fact that hardware is being procured separately? Will hardware vendors be required to certify the performance of the software?

BOB LEOPOLD: Let me read that again. How will the performance of the software be evaluated in consideration of the fact that hardware is being procured separately? Will hardware vendors be required to certify the performance of the software?

A (BY JACK WEBBER) In the process of requiring the modernization hardware we will be putting together benchmarks, live test demonstrations, remote terminal emulation types of things. The vendor will run those benchmarks. Those benchmarks will consist of a representation of the Bureau workload. ALMRS will be participating very actively in the development of those benchmarks. Their requirements, you're going to be addressed, and the benchmarks, performance benchmarks, we'll address those when we get to them. But, yes, the hardware vendor will have to certify the performance of their equipment as it relates to the representation of our workload--Bureauwide workload.

AN ATTENDEE: Who will provide the hardware for the software demonstration testing this is before the procurement of hardware?

A (BY JACK WEBBER) We anticipate the hardware will probably come from the software vendor, the vendor who will be developing the ALMRS software.

BOB LEOPOLD: That's our intent right now.

DAVE LYONS: Okay, I think that the question implies that there will be a--some sort of a live demonstration test associated with the software RFP; is that correct?

BOB LEOPOLD: Yes, that's the question.

DAVE LYONS: We haven't defined that that would occur. It would be kind of a tricky business to do. We're going to be looking at software from the point of view of technical approach. It may include--it may include some form of demonstration of software development capability. I don't think that the mind set will be the same for that as you have to demonstrate hardware.

Q Is the Feasibility Study, the ALMRS Feasibility Study, or the AMS Modernization Study available to the vendors?

A (BY JACK WEBBER) The ALMRS Feasibility Study is complete and is available to the vendors. The Modernization Study is still in the process, and it will be available at the appropriate time.

AN ATTENDEE: To clarify the question is on the AMS Study to be completed in September not of the ALMRS study per se, not the original write up.

Q The question was will the AMS Study that will be completed in September is that available--will that be available to the public?

A (BY JACK WEBBER) Yes, it will be.

Q (BY BOB LEOPOLD) How do they get a copy of that, Jack? Who do they write to and who do they talk to?

A (BY JACK WEBBER) Just write to my office, the Division of IRM in Washington, D.C.

BOB LEOPOLD: I might suggest that at the end you come up, and I'm sure Jack has a business card and just get that address from him.

JACK WEBBER: He assumes incorrectly.

BOB LEOPOLD: It's also in the attempt--it's incorrect, Jack, is that what you said?

JACK WEBBER: I have no business cards here.

BOB LEOPOLD: It is also on the attendance list--you will be able to get Jack's address and telephone number, etc., on the attendance list. By the way, that--we had about 175 people here today. That list is presently being printed out right now, and if our big Xerox baby is working, we'll have a copy when you get out of here today. So, we should know in about an hour. Things look good right now that you will have a copy when you walk out the door. Okay, next question.

Q Has BLM been able to arrive at a definite cost for the ALMRS components and for the overall system? Is the cost breakdown available?

A (BY ERIC STRAND) Government cost estimates aren't normally part of procurement actions, so we are not any different. We are not going to be disclosing our Government cost estimate. It's sort of like buying a stereo. Tell me how much you have and we will sell you one.

DAVE LYONS: There were some Government cost benefit figures that are included in the Feasibility Study. Those we consider to be first cut. What Eric is saying is before we go the final solicitation, evaluation, and award of a definite requirement, we develop an internal Government cost estimate which is proprietary and is not disclosed to the vendor community.

Q Has the Bureau identified any major areas of the ALMRS requirements as specified in the RFI that will be changed based upon vendor responses to that RFI? In which areas will the RFP differ from the requirements specified in the RFI?

A (BY DAVE NELSON) No, we haven't made any radical changes yet. On the other hand, the RFP process we described this morning is still continuing. We will go for some time and many of the issues raised will indeed be discussed extensively prior to the draft--completing a draft and the review process that we will ensue from that and before the RFP there may be changes. We don't want to commit at this point to making any changes, but all suggestions will be considered.

BOB LEOPOLD: Part of the evolution--when I first talked to you this morning, for the last couple of years and prior to that time--this is a learning experience for all of us, and have we made changes as we've gone through this process? Definitely, yes. There is quite a few of you in this room that I know that, either you've talked to us or we've talked to you over the past several years. I think that needs to continue. We want the very best that we can get. I'll leave it at that. Next question, under the data base management category.

Q Does the emphasis upon GKS for graphics imply any constraints upon the way in which map geometry or topologic data are structured, or is GKS only intended for graphic outputs?

A (BY ERIC STRAND) There were a couple questions along this line. The adoption of the interface standard, GKS, is primarily for graphics output. Again, with separate hardware procurement we're looking at trying to have hardware independence as much as possible. This is not meant to preclude anything in terms of a design for an internal data structure to handle the coordinates and necessary topology and also attribute information.

Q Are the readjustments of the North American Datum (NAD 83) and the vertical datum redefinition (NVGD 88) a part of the spatial data standards? Will conversions from both those datums be required in the system?

A (BY ERIC STRAND) At this point, BLM is also participating with other interagency groups to study the adoption of this standard. We don't have an official position at this time and so it's no incorporated as part of the requirements.

Q Is the DBMS Conceptual Model available for industry review? If so, how may we obtain a copy?

A (BY DAVE NELSON) The data model that you saw an overview of by Dave Shaffer this morning will evolve just as we spoke about before on the RFI responses. There is continuing work on workload analysis, data sets are still being identified, and developed. At this point there is no firm release material, and when it is released it will--you will see it as a specification in the RFP.

Q Will the necessary hardware required to complete the software development phase of ALMRS be included as a part of the ALMRS RFP? Some hardware will be required to complete the software development between the third quarter of '88 and January of 1990 when the Modernization Contract will be awarded.

A (BY ERIC STRAND) We're looking at the RFP to include requirements for any development system that might be necessary. That development system would be used for the software development. The development system would be used for the software development up until the point that the modernization procurement has identified a machine and that machine would be available for pilot testing.

BOB LEOPOLD: Did everybody hear that in the back?

Q AN ATTENDEE: Will the prototype machines be available for cross targeting during development?

BOB LEOPOLD: Will the prototype machine be available for cross targeting?

A (BY ERIC STRAND) Do you mean the prototype machines that the Bureau owns presently?

Q AN ATTENDEE: Right.

A ERIC STRAND: Yes, they will be available for that period.

Q Here's a long one, bear with me. If it can be shown that combining the software with the hardware/communication procurements will lead to:

A. Better satisfaction by the user community

B. A more economical approach

C. Greater ability to satisfy technological changes

D. The ability to ensure a full competition

E. Not limiting the technical approach,

would you be amenable to combining the procurements? If so, how would this affect your current timetables, and what would be the new timetables? If not, why?

BOB LEOPOLD: Good question. Who did I get to nail that? Mr. Lyons, god you're a lucky guy, do you know that? Sit on the end–what a guy.

A (BY DAVE LYONS) We have an existing plan. That plan is subject to inputs and its subject to change in a sense. However, in order for us to change the thrust of the way that we are organized right now, and the way that we are going to handle this acquisition, would require really, a redefinition of several things. For example, our definition of Modernization encompasses more than the application of ALMRS.

If we were to extract the hardware requirement from ALMRS that would leave us in a position of really, emasculating that program which is of vital interest to us in view of the 140 vendors that we have talked about before. We have run certain scenarios on a bundled approach as versus an unbundled approach. We believe that it would take a longer timeframe to have a bundled approach in which you can define software and then define the machine environment and then procure the machines and have them delivered and have it all integrated into an operational system. We feel that our approach is sort of a concurrent phased approach.

However, there have been comments in the response to the RFI that talked about a total bundled approach. We've considered that. The majority of the responses as shown by the documentation back there, the summary of the documentation, would indicate that there's some--that the vendors more tend towards our approach then towards the bundled approach. However, you know you're welcome to give us correspondence and establish a dialogue with us.

All I can describe is our existing plan, which is--which has some program authority to it. It's the way that we've--this is the manner in which we have approached OMB. And so this is the road that we're traveling, (I guess is the way we will describe this). And the other thing is that we have done some analysis which indicates that a bundled approach would take a longer time and there's some indication--this may be totally subjective--that it might be more expensive.

Q With the location and recordation of approximately 200,000 unpatented mining claims on public lands each year, is this system going to allow for entry and maintenance of all mining claim data and maintenance of annual assessments and affidavits?

A (BY DAVE NELSON) We have--the answer is yes. We currently have a mining claim system with some 1.8 million claim cases, and indeed new filings assessment work annually. This will be but a small and minor part of the case--well, of the some 17 million cases that we anticipate for lands and minerals data alone.

Q Will the alphanumeric source follow a "standard" descriptive format?

A (BY DAVE SHAFFER) I'm taking the alphanumeric data source to mean the paper that we're currently using that is to be automated. No, the data sources are not standardized. That's one of the complications of this system is that we've got lands and minerals records that date from 250 years ago that are not in any kind of standardized format. That's one reason for the the variant data structure. The need for an immense variety of data structures to capture the data that needs to be in this system. There may be other ways to do it besides variant data structures, but that seemed to be a good way to get at it. That's where we started from.

The data sources range from current things like, grazing application fees to an historical data set, such as land status records from the Eastern States Office, that are 300 years old.

BOB LEOPOLD: Did we make the right interpretation of the question?

Q AN ATTENDEE: I think I understood your answer. Do you view community technology with WORM type storage liable for this particular area?

A DAVE LYONS: As a possibility?

Q AN ATTENDEE: Yes.

A DAVE LYONS: We're not going to exclude it. The design and conceptual model doesn't specify any sort of technology to be used to store the data. We had anticipated that most of the data would not be stored in full text format that it would be in some soof to structured mode for ease of retrieval, but that doesn't preclude the use of full text storage if it is feasible and will do what we want it to do.

Q AN ATTENDEE: Even though that that technology might not fit in with a standard operating system like POSIX?

A DAVE LYONS: We're going to talk a lot more about POSIX, but a quick answer to that would be, if that application can be made to fit a POSIX interface through which that environment would talk to the rest of the system through an interface that looks like POSIX, that's fine to us.

JOHN WONG: I'd like to make a comment about that. There is a certain vendor out there now who has a product that is hooked up to a certain data base that runs under a certain variety of UNIX. We have seen this particular product hooked up in the sense of an independent peripheral tied up to even different--MVS, for instance, operating systems. And so it's premature to give an answer to that particular question, but the basic gist of what we're all about is to be as POSIX conformant as possible, and that we are looking at POSIX in terms of an interface in the same way we are looking at SQL as an interface.

Q A number of off-the-shelf DBMS and GIS systems exist today which could meet ALMRS objectives--let me start again. A number of off-the-shelf DBMS and GIS systems exist today which could meet ALMRS objectives. Why procure a software design and development effort instead of a supported software product?

A (BY JOHN WONG) Well, I suppose we beg to differ in that it's already been defined. I think one of the reasons that we're going through all of this trouble, in our modeling, which by the way is substantial if you look at the--I had a chance to sit down and actually go through one of the subchunks of what the BLM is all about, and it's very, very extensive. The stuff you saw up on the view graphs, the very busied diagrams that showed the data flows, we beg to differ with that particular opinion that, hey, we got what you need out here. Just buy us and you're set. We just don't feel that that's particularly true. We don't feel that the requirements, the complete system analysis has been done. A large part of it has been finished. Neither do we feel that for anyone just to come in off--out of the vendor community and say, "Hey we got exactly what you need. We're walking around with a bundle of solutions, and all we need to do is find out what your problem is." It's far huger than I first imaged it when I came on the project, and I would suggest that before one has the opinion that we have the package that will solve all your needs that the end functional requirements be looked at first.

Q To what level of detail will functional requirements be defined prior to the issuance of the RFP? Will contents of individual reports, screens, and RDBMS records be defined?

A (BY DAVE LYONS) To the maximum extent feasible, which may sound like a cop out, but we haven't really defined the--we haven't gotten to that point yet where we can match the user needs against all procurement objectives to stay in a functional mode as possible. Probably there will be functional specifications with some necessary design characteristics but this will all be matched against the need for competition, efficiency, and economy.

BOB LEOPOLD: That got a lot of smiles out there, Dave, that was a good answer. I liked that.

DAVE LYONS: And motherhood is good too.

BOB LEOPOLD: Hey, we are being honest with you. We don't have all the answers, and I think you can appreciate we're just starting this process as well. Because I'm sure within your own corporations, putting your own systems together, you've gone through the same drill.

Q Will software be acquired from individual firms or will a joint venture be mandatory? We feel that the BLM will be the loser if joint venture is required?

A (BY DAVE LYONS) I think that we intend to have one software development contract. If the question is, that once commercial off-the-shelf software has been defined and who will procure that? Will we procure that through the software vendors or will we procure that as part of the modernization requirement? Those issues are yet to be decided. So, another factor is that as part of the software development contract we have a subcontracting plan requirement which is used to guarantee or to promote the participation of small business, minority businesses, 8A firms and that sort of thing, social economic objectives.

Q Does the contractor on the software procurement have any exclusions on the hardware modernization procurement?

A (BY JACK WEBBER) The answer to that is, no.

Q This is kind of a three part question, so bear with me. Who is currently doing the data base--pardon me--who is currently doing the data collection activity for ALMRS?

A (BY DAVE LYONS) Okay, what we call the status contracts commenced in New Mexico and Arizona. There was a small business, Dynamic Science of Arizona--of Phoenix, had that contract. We issued another competitive solicitation a year ago. The successful contractor is Petroleum Information for Montana. We're--I'm the contracting officer for another solicitation that will be issued next week. It is for approximately--including the options--it is for approximately 16,000 townships to include the states of Colorado and Wyoming, California and Oregon, along with Washington under the administration of Oregon. That solicitation is that--you can sign up for through a written letter to the Denver Service Center, Branch of Procurement. It's unrestricted procurement.

DAVE NELSON: The term status was just used. Could I get a show of hands as to what--if people understand that term. We could try it the other way then.

BOB LEOPOLD: Less than 5 percent Dave.

DAVE NELSON: Data being collected by contract is indeed status. And what status is is the cumulative set of case data that goes into forming the records of the United States that we discussed this morning, and records defines title rights that the United States has in land and defines the rights which have passed to private ownership. So, status is land title transfer information.

Other kinds of data like the land description, bond and surety, name information, and a whole host of other kinds of data are not included in these contracts.

BOB LEOPOLD: Now how many people understand status? Did we get it to 10 percent? Okay. Take a look at some of those maps--

DAVE LYONS: Let me just say one thing, is that the people we use for this status collection are typically landsmen abstractors. We consider it a professional service contract where they examine the records in the public rooms and they take in the same information that we defined in a Status Coding Handbook, and they put it into a format, which will be computer readable and we have what we call data entry into blocks of information. So the process is to use professional services in a production mode to gain this information to put it into a form that it can be manipulated once the software development contract is completed.

Q The second part of that question goes to you again Dave, and that's what is the overall ALMRS schedule? We went over that this morning, but I think we need an update on that.

A (BY DAVE LYONS) Well, the ALMRS schedule is developed--in terms of procurement initiative is as we described that we will have solicitations in January of 1988 for the software development and then the hardware and communications system will be--is targeted for award--Jack, let's give me a date.

JACK WEBBER: January '90.

DAVE LYONS: Janaury '90. There will be a pilot implementation system in--

BOB LEOPOLD: '89.

DAVE LYONS: --start commencing in '89--

BOB LEOPOLD: Portions of it.

DAVE LYONS: --portions of it and the full implementation is scheduled for something like '92 to '93. And then it has a systems life to it of 10--at least 10 years. So that's our basic schedule. The basic--if you're talking about a program schedule. Well, of course, my orientation is what procurement initiatives are spinning out of this project.

Q Is AMS excluded from further work after completion of the requirements document for modernization?

A (BY JACK WEBBER) The contract we have currently with AMS is regarding the Modernization Study specifically excludes AMS for participating in the follow-on procurement of the hardware system software and data communications. We are going to be seeking, very shortly, advice from legal counsel on whether or not AMS will be able to participate in the software development contract as it relates to ALMRS.

Q This is the first time anybody ever called you mister, John, so I'm going to read it like it is, okay. Is Mr. Wong telling us that ORACLE is the de facto standard?

A (BY JOHN WONG) Mr. Wong says, no.

Q What is the functional requirement for POSIX? If other operating systems will accomplish the function required, will they be considered, the same for 'C', GKS, etc.?

A (BY JOHN WONG) I know I sound like a broken record but we're looking at--the idea is this, we're all reasonable and prudent persons and we realize that when we're going to do software first and hardware second there's going to be a conversion. So we want to minimize the conversion. The best way to minimize the conversion in going multi-vendor, since we don't want to be tied to one single vendor well into the next century, is to go with the standard, and emerging standard, that promises to be vendor independent, both hardware and software, and that standard is the POSIX standard as it is emerging today.

And we would say the same thing is true of 'C'. I don't think we need to be theological in arguments about the finer points of 'C'. I think most of us here in this room realize that there is such a thing as Portable C. Most of use Lotus 123, most of use data base systems that are written in 'C', and we're trying to be pragmatic about it, ladies and gentlemen.

Q Would you entertain a proposal for the overall approach to your problem, one vendor to supply: Consultation, hardware, software, project management, conversion, services, application programming, interfacing programming, training, and maintenance?

A (BY DAVE LYONS) I think I have answered that, that the existing plan is to go as we have described, and in order to consider that we would have to change directions at this time. We will continue in a dialogue with anybody who's proposing that.

BOB LEOPOLD: The answer is, yes, we will entertain it. We'll look at it. We'll consider it. It's hard to change a horse in midstream, but let me tell you something, something that is that radical from what the way we're going it--we will give it consideration.

Q Will there be a draft RFP for ALMRS software sent out for comment in the fall of 1987?

A (BY DAVE LYONS) Either we will--we haven't defined this either--we will either have a request for comment or we will have an extended period for a request for proposal. It depends upon what dates we have to work back from as far as our goals of getting on contract.

Q This is kind of a two pager, so bear with me on this one. Jack, this is for you. What is Riso's role in the new job? Many of you probably don't know who Jerry Riso is, but we do.

A (BY JACK WEBBER) I thought we discussed at lunch break that this question wouldn't be asked or answered.

BOB LEOPOLD: You've got to tell it like it is.

JACK WEBBER: First of all for those of you who don't know Jerry Riso, he is the former Deputy--I mean--former Assistant Secretary for Policy Budget Administration in the Department of the Interior. He has left the Interior Department and he now works for OMB. I believe he is on the budget side of OMB. Other than that, I don't know what he's doing over there. I think he's responsible for a few Government agencies. He does participate, and he probably will participate in the OMB review of ALMRS which will take place June 24.

Q Are the AMS Study and NSR Study public information? Can we get it?

A (BY JACK WEBBER) I will address AMS. Yes, it will be public information although it is a quite sizeable study when you look at all the 10 deliverables and there--each one is about 2 or 3 or 4 inches thick. It will be a sizeable job to reproduce and get it out to you at the appropriate time. I assume that NSR's results will also be made available at the appropriate time.

Q Why is ALMRS' software part of modernization? Shouldn't it precede modernization? I think we've answered this a couple times, but you want to take one more shot at it, please.

A (BY JACK WEBBER) The ALMRS' software is a separate procurement, and the modernization is a separate procurement, and ALMRS will precede modernization.

Q Does data concurrency and synchronization mean real time or cut off time?

A (BY DAVE SHAFFER) It probably does not mean real time. Cut off time is as good as any at this point. That sort of design specification is not a part of what we're talking about at this stage of the game. To me that is part of the design specification that the winning vendor will come up with. There may be some functional requirements that may require local real time transaction basis, but that will come out in the functional requirements. And depend upon the design that the winning vendor supplies. If he wants to use real time, and it works and it meets the specs, that fine. If he doesn't, and it still meets the specs, that's fine too.

Q Will GEONET be a mandatory telecom consideration in the proposal? And what about the impact of system FTS200 on the project?

A (BY JACK WEBBER) The first question on GEONET. At this point the department has not made GEONET a department wide standard data communications network. I don't know if they will. I know there is a lot of discussion currently on whether or not to make that determination. Should GEONET become the Department of Interior's standard data communication network, yes, it will have to be a very strong consideration in the modernization effort. As far as FTS2000 is concerned, that's to be determined. FTS2000 is not here. It's a long time away. So, we'll watch that as it progresses.

Q Have you prototyped any part of your data model, and if so, what DBMS was used?

A (BY JOHN WONG) Right now we are prototyping a very, very small segment--best guess less than 5 percent of the total ALMRS system--and currently our prototype machine is--runs under an AT&T type of UNIX. The data base that we are using is ORACLE, and we're using a couple of graphic packages off-the-shelf.

What this will do at this point is kind of a chicken and egg thing, this will give us a baseline from which to then refine the prototyping requirements that will come out of modeling, and so, again, I have to stress what we did was we chose two data base products that are in the UNIX community, UNIFY ORACLE. We did not make them in any way mandatory. Prototype means we can make mistakes. Prototype means we make little mistakes instead of big ones. Prototype means we were just trying it out much as we would be in a lab situation. So, the answer to the question is we are forming the baseline from which to prototye some of the modeling requirements that we will be getting shortly.

BOB LEOPOLD: And I think to carry on just a minute, John, on that. The only intended purpose of our prototype, which is presently over in Building 50 just about a mile away here, is to help us write the specifications for the RFP. That's the only reason we're doing it. It's that simple.

Q Has a DBMS vendor evaluation been performed in meeting your transparency requirements?

A (BY JOHN WONG) No.

Q (BY BOB LEOPOLD) Will one?

A (BY JOHN WONG) Again, we're--I guess I'm going to try and take off where Dave left off. Our best guess at this point is local real time and then whatever seems appropriate outside of that. We try to be realistic. We're not going to say give us a data base that is going to cover an expanse from Washington, D. C. to Anchorage, Alaska, to Huston, Texas, and give you subsecond response time on a query that's got 60 billion operators in it. Nothing does that in the industry at this point, nor for that matter, is there that requirement.

So, in answer to the question are we going to make the truly distributed data base that everyone reads about in the industry press a requirement. The answer is I don't know. I don't thinks so. I think that, as I said before, we're going to look at capabilities, we're going to look at workloads, and we're going to say here you guys tell us what is most appropriate and the closest we'll come to it, again, is we'll probably look at real time situations in terms of local and non-real time situations in terms of completing a query off-site and then having the answer returned on-site.

Q Are higher order languages, other than 'C', acceptable, e.g., ADA?

A (BY JACK WEBBER) Higher order languages are acceptable. We had several meetings on the topic of what type of higher level languages to include as part of the systems software for the modernization effort. We've determined that we will need, COBOL. We will need FORTRAN. We will need 'C'. We have made a determination that we will not look at ADA as one of our high level language requirements.

BOB LEOPOLD: Could everybody hear that?

Q Have you looked at other Government agencies that will have similar requirements, e.g., the Defense Mapping Agency, and how they process spatial data?

A (BY ERIC STRAND) We've looked at other agencies to the extent that the requirements are similar, such as, spatial data processing. You can see from the presentations that the exact requirements for handling land records data is not similar across other agencies. We have been in touch with DMA and other R&D arms of defense, such as the engineering topographic lab at the Corp of Engineers. But, we're also aware that a certain of you vendors may have ongoing classified work with DMA and have access to information that would be useful but we're just not priviledged to see at this time. So, that's really the extent that we've been in coordination with other agencies that may have similar requirements for handling spatial data. We feel that we are pretty much aware of what is state of the art in that regard.

Q Why not require GKS spatial standards for image (satellite and airborne) data?

A (BY ERIC STRAND) I think some of these questions come up because we over stated the use of standards, especially GKS, and I don't want to go into GKS in the fact that it relies also a virtual device interface and other sublayers. Again, let me state that the internal data structures are not being constrained. How you would store image data in a compressed format, how you would store landsat satellite, for instance. We are looking at a functional requirement to ensure that our interface for graphic output is in conformance with the standard, and that standard looks like GKS.

Q Will BLM consider using AI and machine vision techniques to automatically and semi-automatically extract this information from satellite and airborne systems?

A (BY BOB ADER) I'd like to expand that a little bit. We are considering AI beyond just satellite imagery. We could use it for the entire system. So, the answer is, yes.

ERIC STRAND: I'd like to add to that too. AI is pretty broad in the area of pattern and recognition is certainly one area for getting information in, but then you've got the classes of knowledge base systems or expert systems. Certainly, in the area of abstracting information, generating coordinates, there may be applications for expert systems, but anything beyond that we're open to what you might come up with, but certainly its not an area that we can provide some guidance in and its nowhere near an area where they've got standards in place.

Q You did not address the storage and retrieval of data in image form within the system? Are you considering this?

A (BY BOB ADER) Again, the answer is, yes. We have considered the storage and display of imagery data. I think the question also asked if, lower down, whether we were going to display traditional types of geographic information systems kinds of data like land ownership with data themes that could be derived from satellite imagery, and the answer to that is also, yes. We will consider that.

Q We have one more on POSIX standards. Why is the BLM requirements for UNIX (POSIX) with respect to modernization programming requirements as related to

ALMRS? Will UNIX be explicitedly stated as a mandatory requirement in all specifications?

A (BY JOHN WONG) I think where we're at right now given the--where the Airforce is--having made a certain statement, that we will migrate to the POSIX standard as the verification becomes available and as these various procedures are ironed out in the industry. I think that's the safest that we can go at this point, rather than simply say you will be Berkley or you will be AT&T.

Q Will Prime contractors and large firms be given a list of 8A firms and other disadvantaged firms for subcontracting opportunities?

A (BY DAVE LYONS) We sent out the request--an application form--we created an application form specific for ALMRS. One of the questions we asked in the first part of that form is are you a small business, are you an 8A firm and so forth, so that we will have--we are putting this on a PC and you can query it and ask by category how many firms do we have that deal in spatial matters that aren't 8A, for example.

So, yes, you can come in and ask us what we have on file based on whoever has submitted those applications. Other sources for obtaining lists of the Small Business Administration and that's by region, I believe. The Small Business Administration also has a computerized query system called PASS, and you can obtain lists of small and disadvantaged firms or other categories by name function. So, you can contact the Small Business Administration regarding that.

Q Will you use a cost plus contracting vehicle to procure ALMRS' software?

A (BY DAVE LYONS) This is a little bit of my philosophy here. With regard to contract types its not a question of what's the best type or whatever, it's what set of problems are you most comfortable with and which can you control. It's also a function of risk which you can easily redistribute to the vendor and how much risk is really inherently owned by the Government, really won't determine what the paper contractual arrangement we'll have until we see what kind of a statement of work and specifications we have. A cost type contract is more appropriate where we can't really ask a contractor to guarantee a deliverable, but we ask for his best effort. That will be the way that we will look at this.

On the other hand, as I understand it among software vendors, there's some relunctance to get involved within--the intrusion of Government auditors. So, these are tradeoffs. We'll have to look at the market, and we'll have to decide what is the best type. It obviously wouldn't be suited for some sort of a fixed price, lump sum basis. But, other types of arrangements are possible and they will all be considered.

Q Given the overall program multi-project approach, what does BLM see as the major acquisition and technical risks and drivers? Sounds like the kind of question that I write for our organization. Not an easy one. Dave, you want to start it off.

A (BY DAVE LYONS) I was just talking about risks. A risk of separate procurements is a disconnect that we develop software and we procure hardware and that they don't match. To mitigate that risk we are now defining standards which will have a--so that we will have a common functional requirements environment under which they will both be developed and specified. There will obviously--because a software vendor will have to write code against some machine, we will dictate that that machine, according to their technical proposal, be in accordance with that functional environment. That doesn't mean that it will be the same machine that wins the contest for the RFP and gets an award. So, that if there--so that we will attempt to specify that software be developed in such a manner as--so that conversion costs are mitigated.

What we feel is that the cost of converting software would be much less than the cost of limiting competition on the hardware. We also feel that the way that the procurements will be phased will provide us with later technology regarding hardware.

These are some of the risks that we've--we can identify up front. We really have to look and see how far we can go in developing the functional requirements which we have not completed. Any other comments?

BOB LEOPOLD: Okay, what I'd like to do right now--that's the last of the questions. Does anybody have any other written ones they'd like to bring up at this time? Please bring it up.

Q Would you consider a vendor supplied operating system interface for isolating software from VMS, UNIX, etc., specifics--

AN ATTENDEE: --in a wider range.

BOB LEOPOLD: Yeah, I couldn't read that word, wider--giving a wider hardware range?

A (BY JACK WEBBER) Let me ask a follow line question. By that do you mean a vendor operating system that will operate UNIX as a guest?

AN ATTENDEE: No, it would be written is an interface that ties all operating systems hardware specifics that would be one level that we can import to any machine?

JACK WEBBER: Yes, I think we would probably entertain that.

BOB LEOPOLD: That in essence is what we're looking for, if we can do it.

JOHN WONG: And that is in essence that we are expecting POSIX to help us do.

AN ATTENDEE: What if there's a POSIX requirement, wouldn't that be a conflict?

BOB LEOPOLD: The question was in terms of an operating system that would in essence fulfill the same requirements that the standards for POSIX are, would we allow that?

A (JOHN WONG) Well, again, to be realistic about it. Not everyone is going to compete because we all know that for every two vendors there are about eight opinions and about nine different ways to do it. So, what we're looking at is the largest single subset for competition, and for that to happen we need the largest single subset that will conform to a multi-vendor operating system.

BOB LEOPOLD: Okay, what I would like to do now is just take kind of a five minute stretch right in place, thinking of--when you come back we're going to open it up. Those of you who would like to stay we would welcome that. We're going to come back and spend a little more time for specific questions. So, let's just take a five minute thing and break. I think you've earned that, and I'll announce in about five minutes to get back together.

(A break was taken from 2:10 p.m. to 2:25 p.m.)

QUESTION AND ANSWER SESSION (CONTINUED)

BY BOB LEOPOLD:

Q Your displayed schedule--which I don't know exactly what that means--shows two months elapsed time between award and CDR. Do you still feel the schedule is realistic? I need a clarification on what schedule has this person seen so that we can answer the question.

AN ATTENDEE: The one in the back of the room. The modernization schedule at the top of the board.

A (BY ERIC STRAND) Okay. We thought that was an interesting question. We went through all of our overheads and couldn't find it, so we assumed it must be in the back of the room somewhere. Those charts shouldn't be taken as cast in concrete, obviously. The reason we've got some of the milestones on there that we do is that we were looking to analyze the relationship between the point in time when we would have award, and the point in time where we would have a critical design review, and whether certain decisions that would be made or bought off on during that critical design review would have a relationship to the modernization procurement in terms of the timing. So, don't–if you've copied down the dates of some of those things in the back, I warn you as far as their accuracy. They were our planning tools.

What is important there is what you can get out of a pert chart are the steps that we're looking at going through and some of the dependencies between those steps--not necessarily the dates.

Q How are we defining CDR? And lastly, what documentary design, maturity, etc., how are we defining those?

A (BY ERIC STRAND) Go ahead and read the next question, too. I'll answer both of them.

Q What system development specification standards will be used? DOD uses, blank, blank, blank. Okay, what are we using?

A (BY ERIC STRAND) CDR does stand for Critical Design Review. I had him read the second question because we are not going to require mill standards, but we are asking for industry standards in terms of the documentation and design methodology. And we're doing that from the point–two purposes actually. We know that corporations that have been in this business probably have some pretty good tools to support their design and development methodology, and that if we were to ask for a different set of documentation we'd not only incur the expense but also the frustration of translating our requirements into yours, and having you come back and translate your requirements to your people and back again to us. And we're looking to avoid a lot of that confusion. So, we will be reviewing the proposals for the accuracy of the development methodology and the documentation and the approach used by the company, but we're not requiring mill standards or anything like that.

BOB LEOPOLD: Okay. That's all the written comments that we have. I open it up to you now. If you have some specific questions you'd like to ask, I'd very much like you to come up to the microphone, if you're up to it, and state your name and your coporation. You don't have to, but I would like to have you do that.

So, does anyone have any questions that haven't already been answered? The reason I'm asking you to do that just so Tina can get your name, and we can spell it right, and it could look good, okay.

Q DON MCDONALD WITH EDS: The question is on the use of standards, as obligatory, in order to maintain a long life cycle for the application systems. Now, the field that your encompassing is highly, highly dynamic, changing rapidly, some at virtually from six months to six months, some at even less--and standards as standards instead of guidelines may tend to preclude advancements that you may need and their coordination later on with other software and other hardware. I find the use of standards as standards contradictory with getting the best material, the best equipment, and the best software. I think there should be guidelines. Has the use of them as guidelines been considered?

A (BY JOHN WONG) Well, I guess I repeat myself a lot in here. We believe that the greatest competition will come about with reference to not only the machine classes that I had detailed to you previously, namely mainframe all the way down to mini, super mini, that we get the greatest amount of competition from people who have operating systems that are UNIX-like and therefore able to make them POSIX conformant. But, we also believe that the technologies that are going to be proposed will follow that same main stream.

When you look at the CAD/CAM market today, when you look at the automated cartographic market today, when you look at the relational data base offerings today, I think it's just as easily for you to go ahead and make a text survey as I and find that many, many of these exists and are flourishing in the "UNIX" market.

BOB LEOPOLD: The question goes beyond that, though.

JOHN WONG: Yes, go ahead.

Q DON MCDONALD: Use of those as guidelines as opposed to as obligatory standards. There is a difference.

A BOB LEOPOLD: My reaction to that would be, when we write our specifications for this contract if we're merely to go in there and put them in as guidelines, that's exactly what we would end up as guidelines. There would be no way--looking at working with our contractor, in fact, enforcing those as guidelines. You know exactly what would happen as well as I do. That's exactly what we would get.

I think more importantly, may be another issue, is the kind of users, not just internal to the BLM but external, is one of the reasons we feel so strongly is that standards must be a part of this contract. And right now our position is that standards will be a strong and integral part of this contract.

Q DON MCDONALD: The use of guidelines, however, and incidentally we're looking for a standard, would be worn out in your development text, in your text--unless you would have your answers. If you did incoporate those as your standards, that is done in R&D contracts. I see elements of R&D in what you're discussing.

A ERIC STRAND: I think we'd have to look at standards as they apply component by component. You know that often standards are really very strong guidelines. The RS232 plug is my favorite, that all the lines identified what you needed, just didn't tell you which order they should be in.

JOHN WONG: ASCII is another favorite by the way, gentlemen.

ERIC STRAND: I think we have attempted to review the use and the development of standards within the current timeframe, this window of opportunity that we have for designing and building this system and we're looking to, let's say, make up for some ineffeciencies by standards because of the other advances in the, let's say, hardware technology. And there are engineering tradeoffs at this level. We feel the standards we have proposed give us the surest set of guidelines to work within and there are a number of areas, as you point out, that may be more toward the R&D side, in which case, standards at this point just is a stepping off point and you will have to develop new things to fill the gaps to have a complete system.

BOB LEOPOLD: Question.

Q SCOTT MORRHOUSE WITH ESRI: Will there be a software benchmark associated with the software procurement, or will the decision be based entirely on the proposal?

BOB LEOPOLD: Could everybody hear the question? Dave, why don't you repeat it for them, please.

A (BY DAVE LYONS) A benchmark in the sense is contradictory to software R&D in the sense that a benchmark for hardware procurement exists. What we are trying to intellectualize right now is how do we have a software vendor submit a technical proposal and demonstrate technical capability. I don't think I would use the word benchmark, but we are trying tc find--or we will be trying to find some way in which we can verify the capability of the software proposal to do what they promised to do. And that will be through--hopefully through some form of a demonstration, but I'm not going to try to pretend that we can develop a timed benchmark for software that would be meaningful in the sense of R&D. It's just that we're trying--we're going to be looking for a feature called Technical Excellence through demonstration of capability and that will be through a narrative of understanding the problem and through some demonstration of how that would be put into action so that we can verify it. But, we really haven't intellectualized how we're going to do that.

Q SCOTT MORRHOUSE: Just to follow up. How about after the award, will there be a requirement to meet the--meet performance and functional specifications for the system subsequent to the award?

A DAVE LYONS: Are you talking about a critical design review in that sort of--

Q SCOTT MORRHOUSE: I'm talking about a performance--

A DAVE LYONS: Acceptance testing?

Q SCOTT MORRHOUSE: Yes.

A DAVE LYONS: Yes.

BOB LEOPOLD: Yes. Question in the rear.

Q BILL JOHNSTONE WITH MACDONALD DETTWILER & ASSOC LTD: Just on the topic of graphic standards, did you consider the fixed graphic standard as well as GKS?

A (BY ERIC STRAND) That's always an interesting one too. If we were doing more things such as 3D part assemblies and if we were GM, we would probably consider FIGS. While it is true that in reservoir engineering and some of the recent outlook in R&D, there may be emphasis in going toward FIGS. There's also a similar argument that GKS is looking at 3D standards, too. As I brought up before, the GKS standard is to serve some of its original purposes and that is an interfacive device, independent interface for graphics output. We're not looking at it influencing internal data structures or data models, and we see that most of the work that we do in graphics at some point in time gets projected on a 2D plane and off to a graphics device. Is that--

BILL JOHNSTONE: That's fine, thank you.

BOB LEOPOLD: I know we've got to have more questions than this. We can take a break and then come back in if you want to think about it, or we can make a wrap right now. It's your choice. What's the general concensus? Should we wrap?

Q GREG BISHOP WITH HP: Will the communications be part of the hardware procurement, or will it be a separate procurement?

A (BY JACK WEBBER) The communications is part of the hardware procurement.

Q GREG BISHOP: Okay. Including the carriers and the whole network?

A JACK WEBBER: The whole network.

GREG BISHOP: Okay. Thank you.

ERIC STRAND: I should add a qualifier on that, Jack. The software development must include the types of interfaces to that communication system. The next levels of the communication protocol. So, in our sense of conveying what we're using as standards and guidelines on the communication protocol and also the hardware itself, that's all part of modemization. But, the design of this system must address how it can interface to those communication protocols.

Q LARRY PROCTOR WITH GE: If I follow the life cycle in the back and not really worrying about the dates, I see a logical data flow diagram, I see something called physical design. Will you prepare a physical or a new design of the system before you submit the--and issue the request for proposal or will--where do you stop? What are you going to provide to the vendors, I guess?

A (BY DAVE SHAFFER) I don't envision the new logical design being part of the RFP. The idea is to give the software developer the widest possible latitude in defining an answer to our problem. In fact, the current physical and current logical may not even be part of the RFP. They may be made available to the vendor that wins the contract as specific information, and I don't know any of the constraints on that, but the point is that the RFP is going--the modeling efforts are going to describe functional requirements and that's their whole purpose. They're not to hand to the vendor and say do this.

BOB LEOPOLD: The modeling, I've heard as we've described it, merely helped us write the specifications.

Q LARRY PROCTOR: So, you're saying is that once you have the specifications you may have to go back and do another current study of the system as part of the proposal?

A (BY DAVE SHAFFER) I would invision the winning vendor doing some design work that would include new logicals--new logical data flows.

Q LARRY PROCTOR: Does that all still include new data structures and new models also?

A (BY DAVE SHAFFER) Yes, because the data structures that the vendor actually uses to solve the problem may be quite different than the ones that we've described.

LARRY PROCTOR: Okay. Thank you.

Q RON HOGAN WITH HASP: It seems that you've gone through a tremendous amount of effort to make a modular system conforming to industry standards where it can grow it can swing with the technology. We keep hearing continuous references to vendor for the software supplier, and I assume that that means that you're talking about one vendor. It would seem to me that in order to take advantage of the systemized approach and one of the things about UNIX, in particular, is that UNIX is a growing, living system. If you look at all the libraries in UNIX many utitlities that are added by people and this is one of the beautiful parts of it, because it can easily link together and use.

It also seems to me that if you do not allow some splitting out of the software and allow several vendors--I know that it's going to be a lot more trouble for you, but you're going to be giving up a lot of possible expertise that you wouldn't get if you had one big software vendor. Because one big software vendor is going to use all of his own things and not going to put together building blocks from other people. I'd like to know to what extent that you would--what kind of flexibilty you would have in that regard especially for special purpose applications that no one else has?

A (BY DAVE LYONS) Its sort of a question of accountability. You know, we're breaking out software from hardware, and that's somewhat controversial, because--we're not finger pointing--there are some issues with regard to software and with regard to commercial off-the-shelf modules that will be contained in this software package, which we haven't really developed as far as licensing at all of the locations--who's going to be responsible for that? Will the software developer simply propose certain commercial off-the-shelf software, buy a license to use as a part of the development, and then the Bureau will procure that separately? These are issues that we simply haven't resolved. The support of software over the system's life, as far as maintenance is concerned, is another issue. So, I guess we haven't resolved that aspect.

We tend towards single accountability for software development and we're looking to a solicitation for software development. So, as you know--whatever--I would expect that there's going to be teams, there's going to be some members of several teams. It's the sort of thing that we expect to happen. I think it just compounded to such a degree to try to--we wouldn't know exactly where to break it out either as far as what portion of the software to break out and then we have further disconnect issues.

ERIC STRAND: Just to add to that point of accountability. We are looking for a single software development vendor to be accountable for the design and construction of this system through to acceptance test. That single vendor can obviously draw upon anything available in the marketplace in coming up with the design and a construction of the system. But, we already have the split as Dave mentioned, between hardware and software and the Bureau is not looking on--looking at taking on the owners responsibility for designing a master architecture and coming up with a physical design, like the previous question, that we would just hand over and have a coding shop develop.

Q RON HOGAN: I think my question is--you're pretty much to the point--but what I was really driving towards are you going to have any kind of a clearing agency or any kind of a coordinated effort to, for instance, to bring all these people together so that you get the best shot at the solution to your problems?

A (BY DAVE LYONS) You should have all received applications. That's our attempt to create a data bank of interest in certain aspects of this total requirement, and that data bank will be available to anyone who wants to query it. There's also going to be a library available which will include any non-proprietary brochures, information that any vendors have submitted that's non-proprietary. But all of the names are non-proprietary and any kind of communications amongst different groups is at your own initiative.

BOB LEOPOLD: That bidder's library, in addition to having what Dave expounded on, would also have a lot more background material on the project, and also have a lot of background material on the BLM. We're working on getting it set up. It is not quite there. I'd say within a month we'll have it.

Okay. Any other questions? Okay. Well let me thank you for coming and being a part of--question?--Murphy's Law has set in, okay. We did get the list. It is about 80 pages long, believe it or not, for everybody that's in here. It's going to be available at

4 o'clock today. That's not going to help a lot of people. I will promise you that it will get mailed out tomorrow morning and you can expect it at your headquarters as soon as the U.S. Postal Service will get it there. I'm sorry but our main Xerox broke down this morning. There's nothing I could do about it. The computers work, but not the Xerox. That's the good news.

Again, let me thank you for coming. We'll be around the room to talk with you if you have any questions. Have a safe trip home.

(The RFI Conference concluded at 2:45 p.m.)

REPORTER'S CERTIFICATE

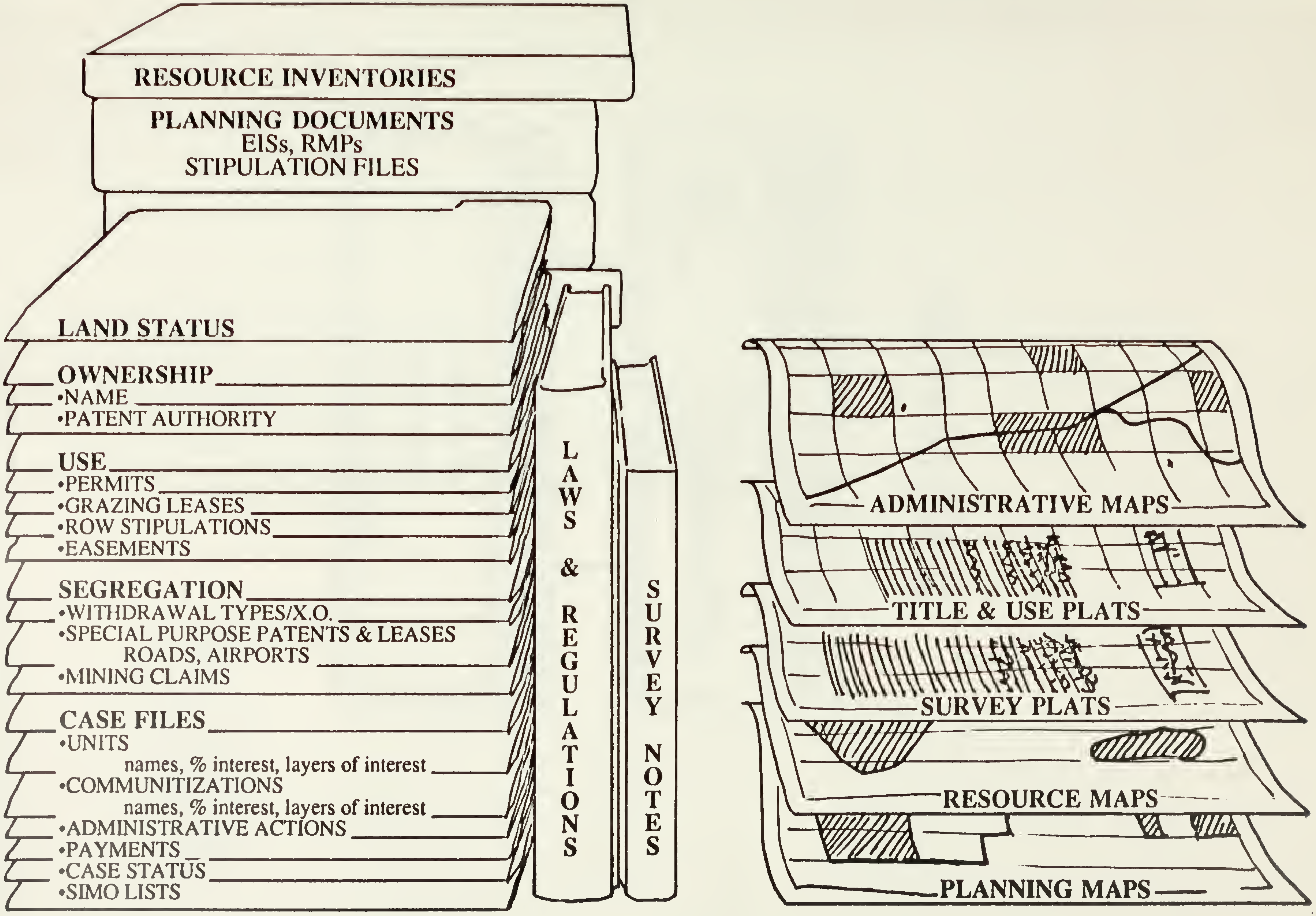
The above and foregoing is a true and complete transcription of my stenotype notes taken in my capacity as a Shorthand Reporter, at the time and place above set forth.

Dated at Lakewood, Colorado June 10, 1987.

Tina M. Bishop

Tina M. Bishop
Shorthand Reporter

APPENDIX #1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PLANNING DOCUMENTS
EISs, RMPs
STIPULATION FILES
LAND STATUS
OWNERSHIP
•NAME
•PATENT AUTHORITY
USE
•PERMITS
•GRAZING LEASES
•ROW STIPULATIONS
•EASEMENTS
SEGREGATION
•WITHDRAWAL TYPES/X.O.
•SPECIAL PURPOSE PATENTS & LEASES
ROADS, AIRPORTS
•MINING CLAIMS
CASE FILES
•UNITS
names, % interest, layers of interest
•COMMUNITIZATIONS
names, % interest, layers of interest
•ADMINISTRATIVE ACTIONS
•PAYMENTS
•CASE STATUS
•SIMO LISTS
LAWS & REGULATIONS
SURVEY NOTES
ADMINISTRATIVE MAPS
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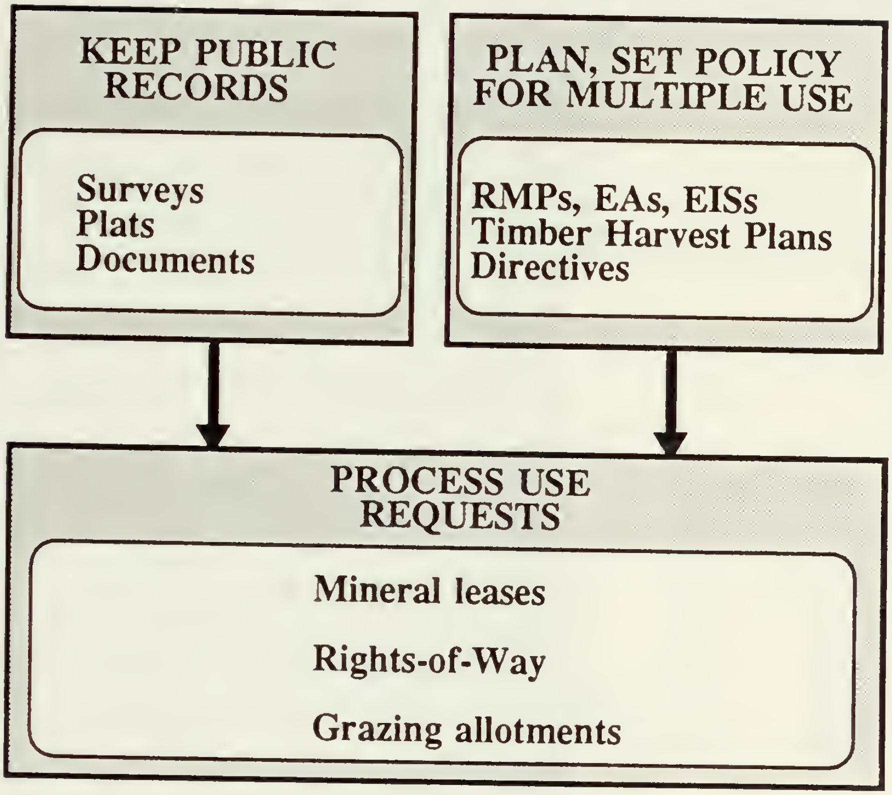
PLANNING MAPS

BLM WORK



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PLAN, SET POLICY FOR MULTIPLE USE

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- Mineral leases
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- Grazing allotments

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APPENDIX #2

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